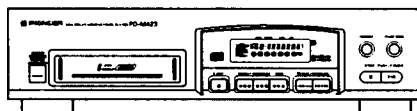


# Service Manual



ORDER NO.  
RRV1062

MULTI-PLAY COMPACT DISC PLAYER

# PD-M423

## PD-M403

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	PD-M423	PD-M403		
KUXJ	○	○	AC120V	
KCXJ	○	○	AC120V	

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# 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.



## WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.



## NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols  (fast operating fuse) and/or  (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

## REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible  (fusible de type rapide) et/ou  (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

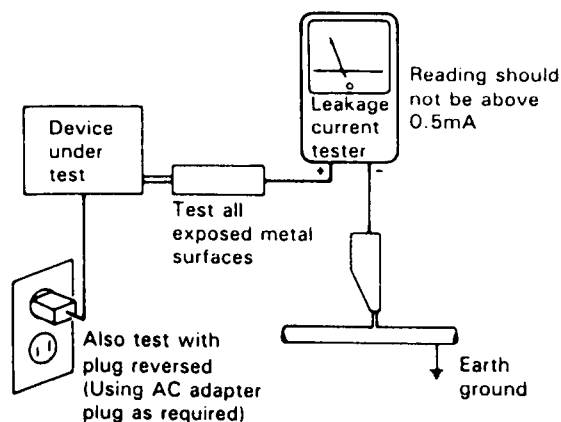
(FOR USA MODEL ONLY)

## 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

## 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

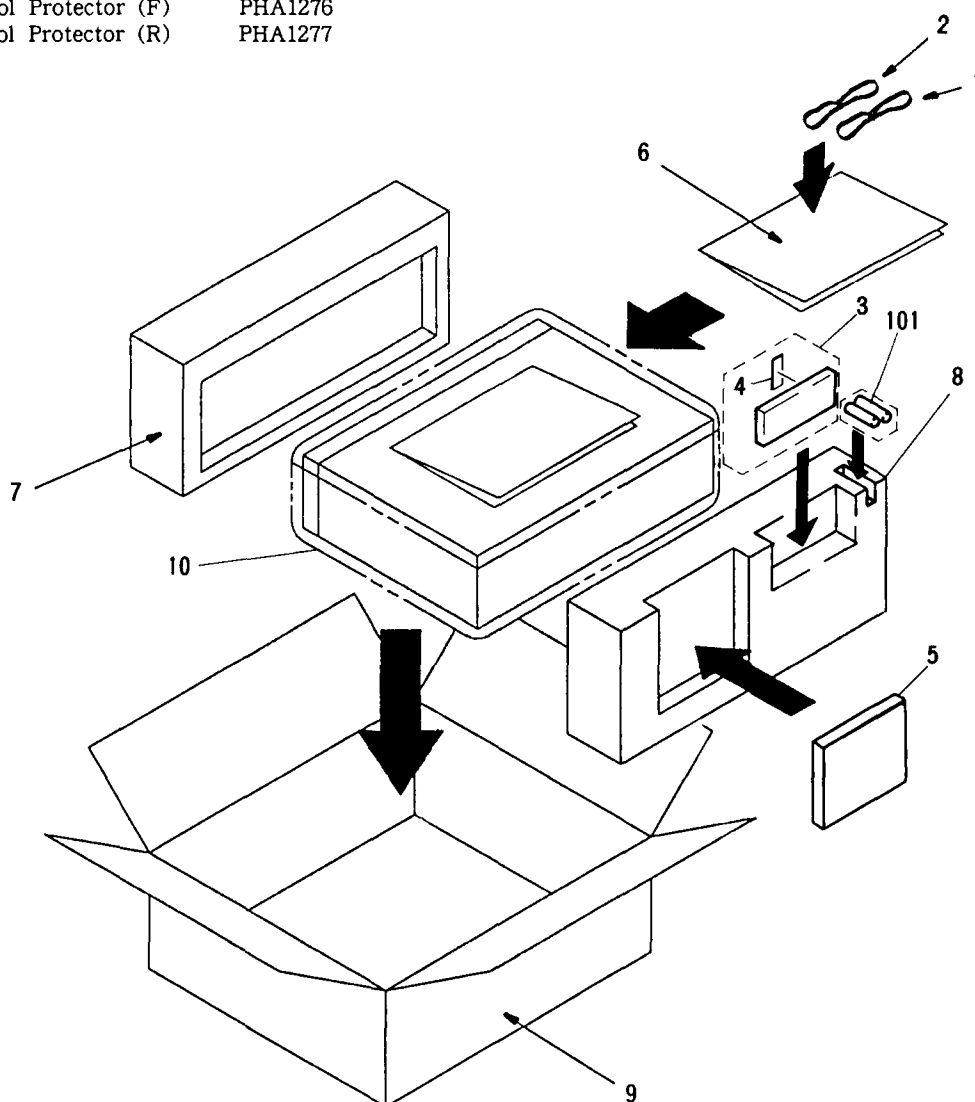
## 2. PACKING AND PARTS LIST

### NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\triangle$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "☉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.



### Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Connection Cord with Mini Plug (for SR cord)	PDE - 319		9	CD Packing Case	PHG1999
	2	Connection Cord with Pin Plug (for Audio)	PDE1109		10	Mirror Mat Sheet	Z23 - 007
	3	Remote Control Unit	PWW1089	NSP	101	Dry Cell Battery (R03, AAA)	VEM - 022
	4	Battery Cover	PZN1010				
	5	Magazine Assy	PXA1523				
	6	Operating Instructions (English)	PRB1205				
	7	Styrol Protector (F)	PHA1276				
	8	Styrol Protector (R)	PHA1277				







### 3. EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by “” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

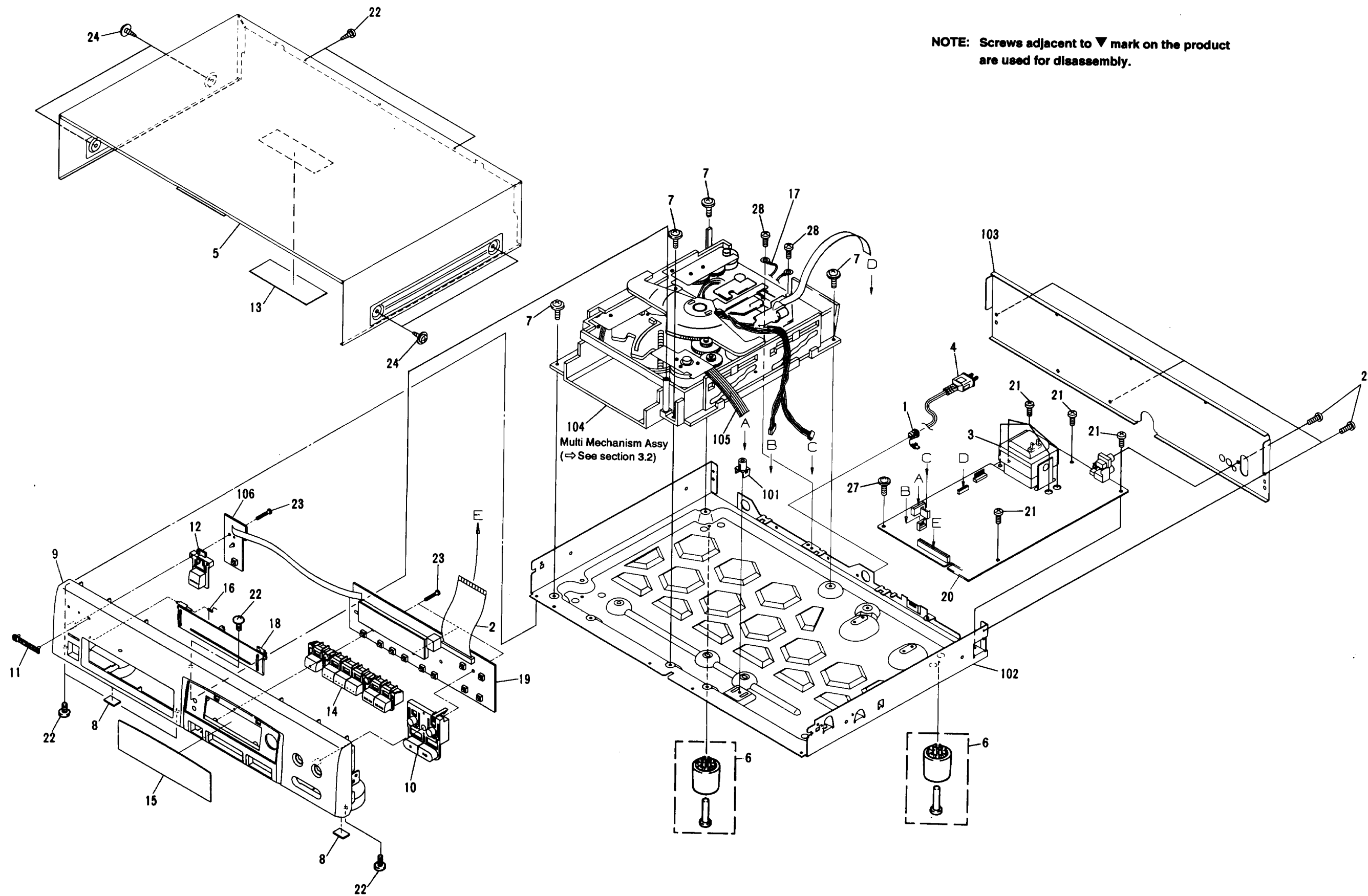
#### 3.1 EXTERIOR

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Strain Relief	CM – 22C	NSP	101	PCB Mould	AMR1525
	2	32P F.F.C./30V	PDD1041	NSP	102	Under Base	PNA1751
	3	Power Transformer	PTT1237	NSP	103	Rear Base	PNA2068
	4	Power Cord with Plug	PDG1015	NSP	104	Multi Mechanism Assy	PXA1532
	5	Bonnet	PYY1149	NSP	105	Flat Cable (6P)	D20PYY0615E
	6	Foot Assy	AEC1531				
	7	Screw	IBZ30P080FCC	NSP	106	Switch Board Assy	PWZ2804
	8	Rubber Sheet	AEB1111				
	9	Function Panel	PNW2387				
	10	Play Button	PAC1766				
	11	Name Plate	PAM1608				
	12	Power Button	PAC1719				
	13	65 Label	ORW1069				
	14	Track Button	PAC1765				
	15	Display Window	PAM1635				
	16	Spring (Door)	PBH1022				
	17	Earth Lead Unit	XDF – 502				
	18	Door	PNW2264				
	19	Function Board Assy	PWZ2769				
	20	Mother Board Assy	PWM1858				
	21	Screw	BBZ30P060FMC				
	22	Screw	BBZ30P080FZK				
	23	Screw	PFZ30P120FMC				
	24	Screw	FBT40P080FZK				
	25	.....					
	26	.....					
	27	Screw	IBZ30P180FMC				
	28	Screw	PDZ30P050FMC				



**NOTE:** Screws adjacent to ▼ mark on the product are used for disassembly.



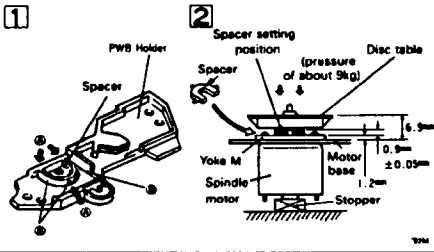
3.2 MULTI MECHANISM ASSY

\*1: Fix the motor 101 on the loading board assembly 105 so that the label attached on the motor faces the direction illustrated.

\*2: Fix the motor 101 on the motor board assembly 110 so that the label attached on the motor faces the direction illustrated.

• How to install the disc table

- 1 Use nippers or other tool to cut the three sections marked ⓐ and the three sections marked ⓑ in figure. Then remove the spacer.
- 2 While supporting the spindle motor shaft with the stopper, put spacer on top of yoke M, and stick the disc table on top (takes about 9kg pressure). Detach the spacer.

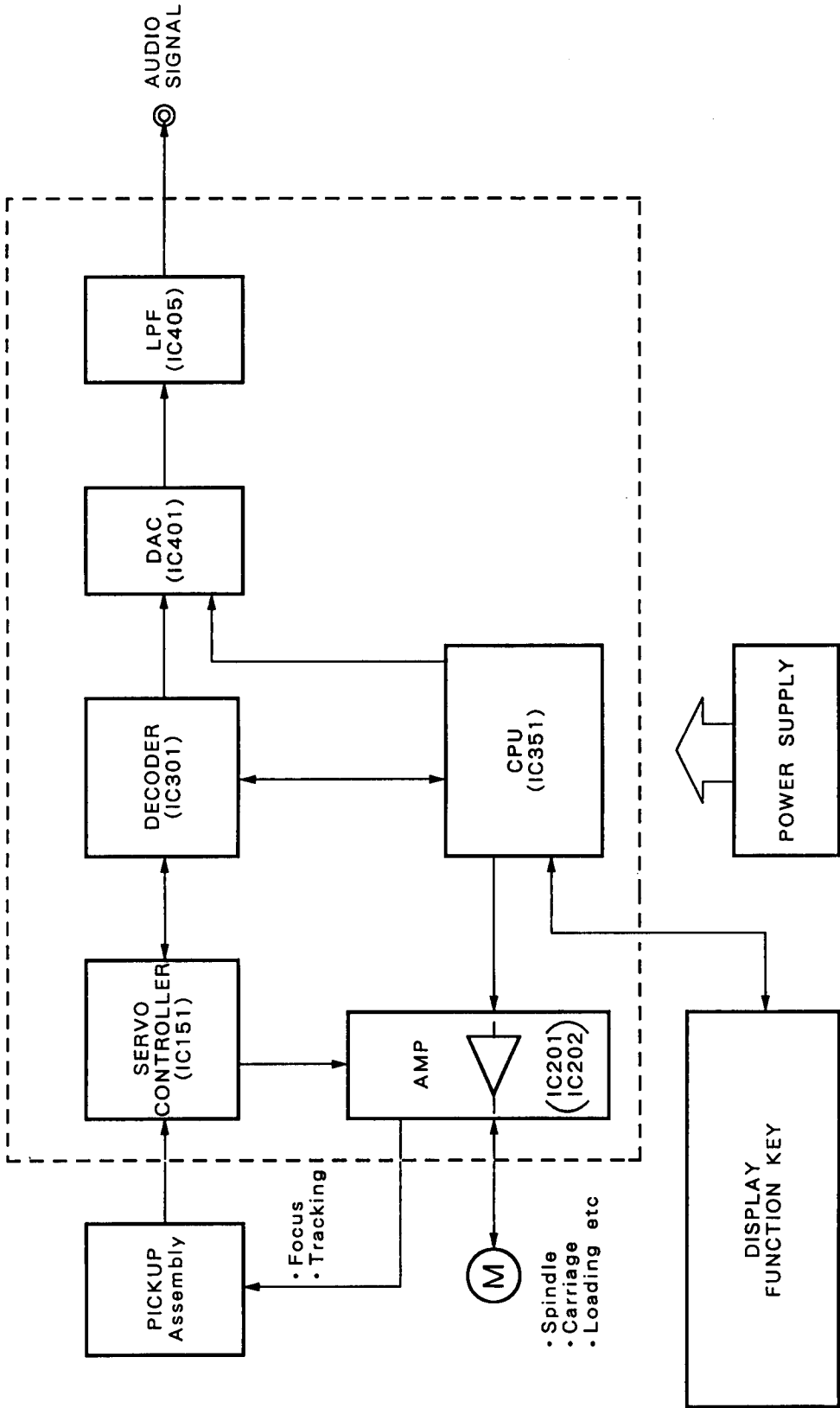


## Parts List

Mark	No.	Description	Part No.
	1	Motor Pulley	PNW1634
	2	Gear Holder	PNW1929
	3	PU Flexible Cable	PNP1343
	4	Cam Gear	PNW1923
	5	Belt	PEB1138
	6	Top Guide N	PNW2441
	7	Gear Pulley	PNW1918
	8	Gear S	PNW1919
	9	Gear L	PNW1920
	10	Eject Spring	PBH1107
	11	Switch Lever	PNW1927
	12	Seven Bar	PNW1931
	13	Sub Rotary Lever	PNW1933
	14	Sub Rotary Lever Spring	PBH1111
	15	Rotary Lever	PNW1932
	16	Drive Plate	PNW1930
	17	Motor Screw	PBA - 112
	18	Holder Lever Spring	PBH1110
	19	Disc Holder	PNW1924
	20	Cushion A	PED1001
	21	Holder Lever	PNW1925
	22	Float Rubber	PEB1014
	23	Float Rubber	PEB1132
	24	Float Screw	PBA1073
	25	Release Lever	PNW1934
	26	Release Spring	PBH1106
	27	Clamper Cam	PNW1922
	28	Clamper Holder	PNW1921
	29	Clamper Spring	PBH1109
	30	Clamper	PNW1857
	31	Lock Lever	PNW1917
	32	Lock Spring	PBH1108
	33	Stair NL	PNW2443
	34	Stair NR	PNW2444
	35	Synchronize Lever	PNW1926
	36	Motor Assy (LOADING, DISC SELECT)	PEA1130
	37	Screw	PMZ26P040FMC
	38	Screw	PPZ30P080FMC
	39	Screw	BBZ30P060FMC
	40	Washer	WT26D047D025
	41	Washer	WA31D054D025
	42	E Ring	Z39 - 010
	43	Screw	IPZ30P080FMC
	44	Rubber Spacer	PEB1238
	45	Rubber Spacer	PEB1179
	46	Silent Ring	PBK1093
	47	Washer	WA62D130D025
	48	Earth Spring	PBH1132

Mark	No.	Description	Part No.
	49	Guide Bar	PLA1094
	50	Disc Table	PNW1067
	51	Gear 1	PNW2052
	52	Gear 2	PNW2053
	53	Gear 3	PNW2054
	54	Pinion Gear	PNW2055
	55	PWB Holder	PNW2057
	56	Carriage Base	PNW2445
	57	D.C. Motor Assy (spindle with oil)	PEA1235
	58	Pickup Assy	PEA1291
	59	Disc Table Assy	PEA1035
	60	Screw	BBZ26P060FMC
	61	Screw	BPZ20P060FMC
	62	Screw	BPZ26P100FMC
	63	Screw	JFZ17P025FZK
	64	Screw	JFZ20P040FMC
	65	Washer	WT12D032D025
	66	Connector Assy	PDE1241
	67	Stopper Spring	PBH1131
	68	Stopper	PNW2069
	69	D.C. Motor Assy (CARRIAGE)	PEA1246
	70	Upper Chassis	PNB1267
	71	Sub Chassis	PNW2440
	72	Connector Assy	PDE1240
NSP	101	Motor	VXM1033
NSP	102	Eject Lever	PNB1306
	103	• • • • •	
NSP	104	Servo mechanism Assy M	PXA1512
NSP	105	Loading Board Assy	PWZ2038
	106	• • • • •	
	107	• • • • •	
NSP	108	Main Chassis	PNW2074
NSP	109	Select Board Assy	PWZ2533
NSP	110	Motor Board Assy	PWZ2040
NSP	111	Mechanism Board Assy	PWX1192
NSP	112	Earth Lead Unit	PDF1074
NSP	113	Clamp Magnet	PMF1014
NSP	114	Gear Stopper	PNB1303
NSP	115	Yoke M	PNB1312
NSP	116	AV Angle	PNB1405
NSP	117	Carriage DC Motor / 0.3W	PXM1027

4. BLOCK DIAGRAM



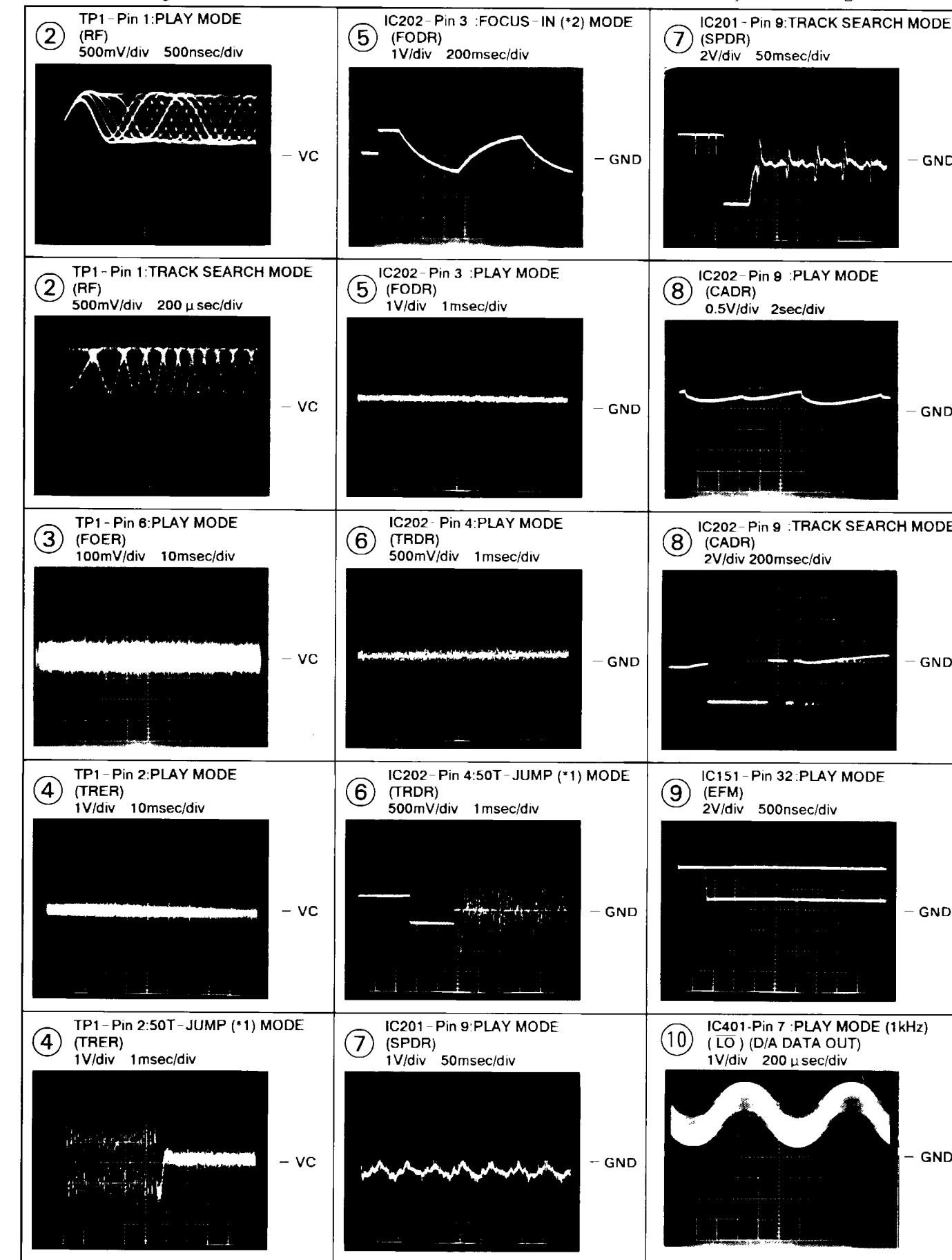
## 5. SCHEMATIC DIAGRAM

### 5.1 Waveforms

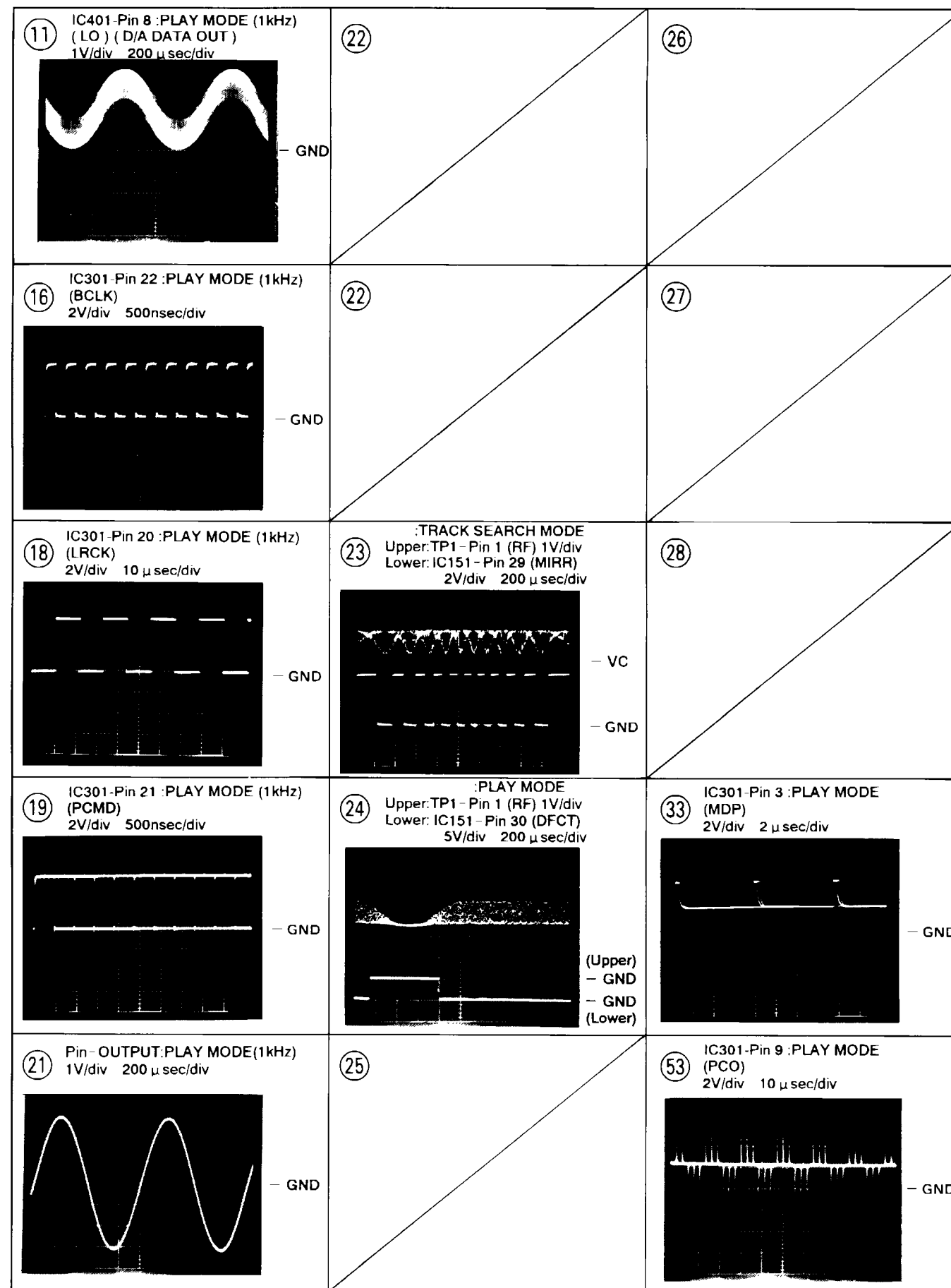
Note: The encircled numbers denote measuring points in the schematic diagram.

\*1 50T-JUMP: After switching to the pause mode, press the manual search key.

\*2 FOCUS-IN: Press the key without loading a disc.



11



12

### NOTE FOR SCHEMATIC DIAGRAMS (Type 4A)



1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".





2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:  
Unit: k $\Omega$ , M $\Omega$ , or  $\Omega$  unless otherwise noted.  
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.  
Tolerance: (F):  $\pm 1\%$ , (G):  $\pm 2\%$ , (K):  $\pm 10\%$ , (M):  $\pm 20\%$  or  $\pm 5\%$  unless otherwise noted.

4. CAPACITORS:  
Unit: pF or  $\mu$ F unless otherwise noted.  
Ratings: capacitor ( $\mu$ F)/ voltage (V) unless otherwise noted.  
Rated voltage: 50V except for electrolytic capacitors.

5. COILS:  
Unit: mH or  $\mu$ H unless otherwise noted.







6. VOLTAGE AND CURRENT:  
 or  $-V$  :  
DC voltage (V) in PLAY mode unless otherwise noted.  
 mA or  $-mA$  :  
DC current in PLAY mode unless otherwise noted.  
Value in ( ) is DC current in STOP mode.

7. OTHERS:  
•  or  : Adjusting point.  
•  : Measurement point.  
• The  mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. SCH- ON THE SCHEMATIC DIAGRAM:  
• SCH- indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

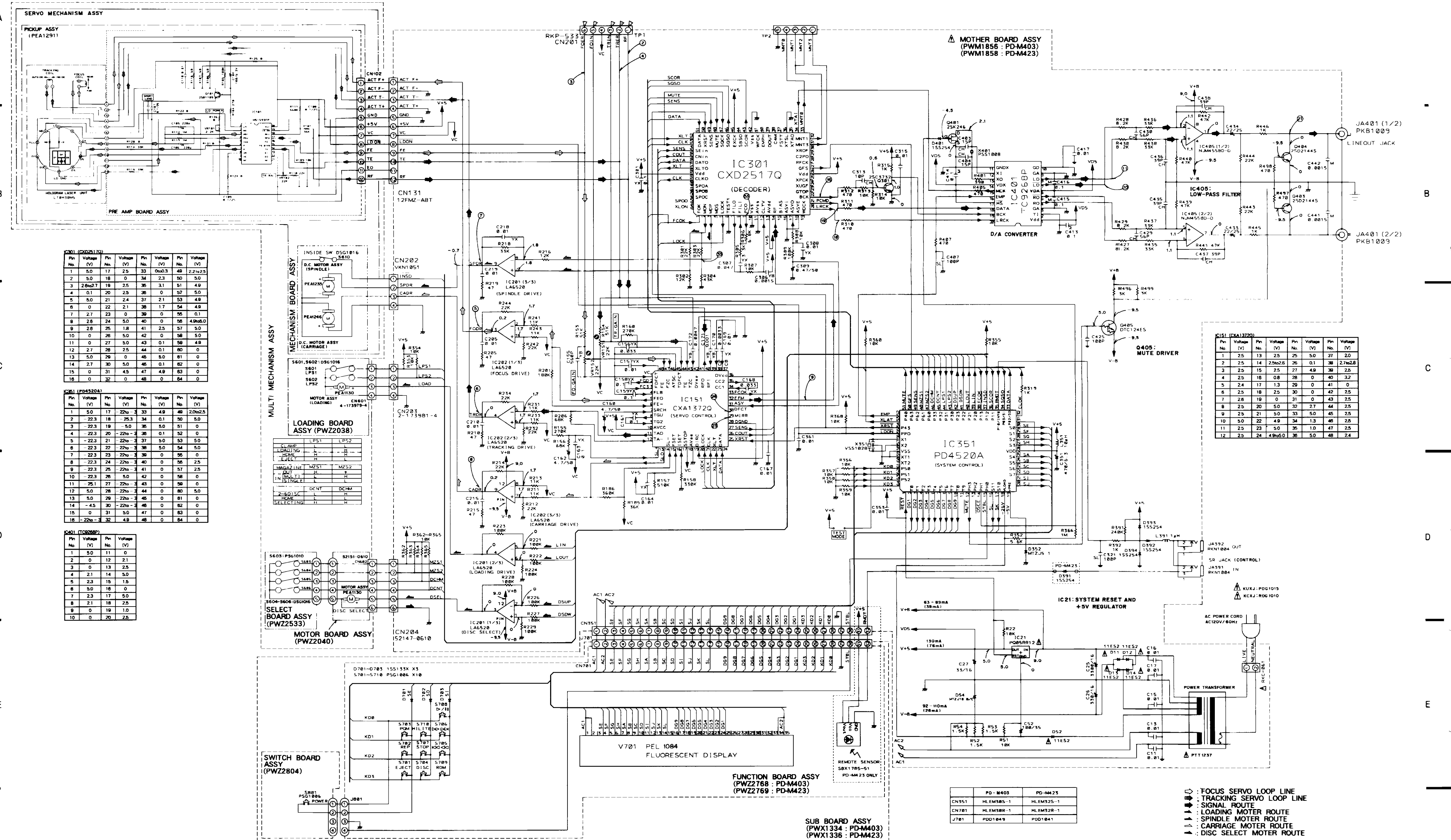
9. SWITCHES (Underline indicates switch position):

FUNCTION BOARD ASSY

S701 : EJECT  
S702 : REPEAT  
S703 : PROGRAM  
S704 : DISC  
S705 :    
S706 :    
S707 : STOP  
S708 :    
S709 : RANDOM  
S710 : HI-LITE SCAN

SWITCH BOARD ASSY

S801 : POWER





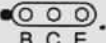


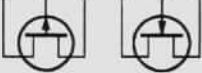






- This diagram is viewed from the mounted parts side.

A

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

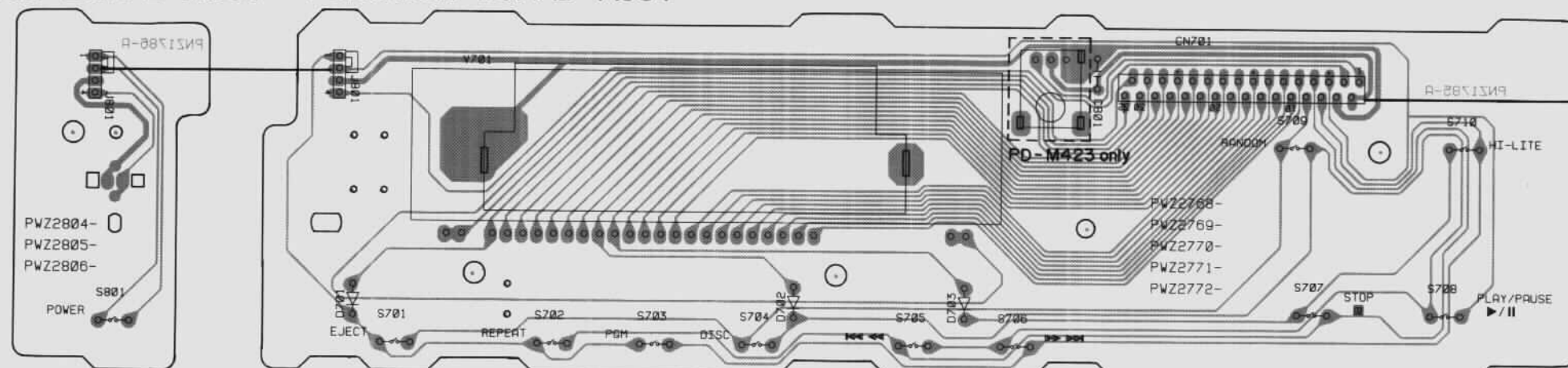
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

B

C

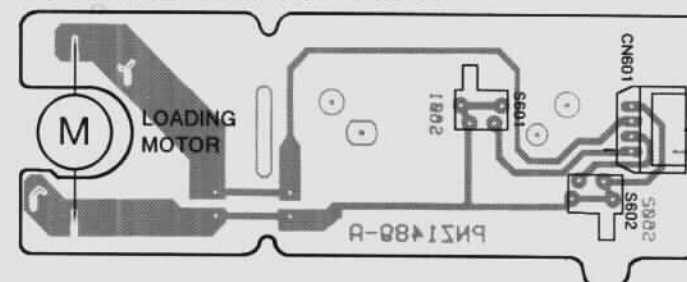
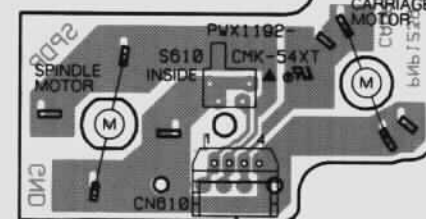
D

## SWITCH BOARD ASSY      FUNCTION BOARD ASSY

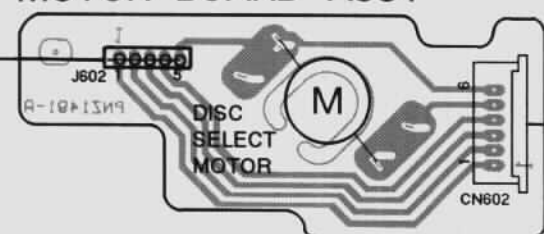


PNP1366 - A

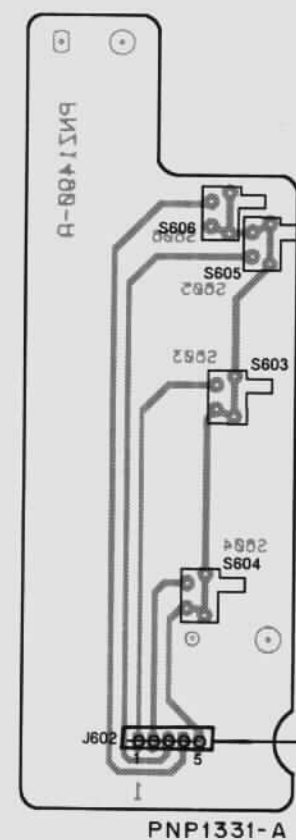
## LOADING BOARD ASSY

MECHANISM BOARD  
ASSY

## MOTOR BOARD ASSY

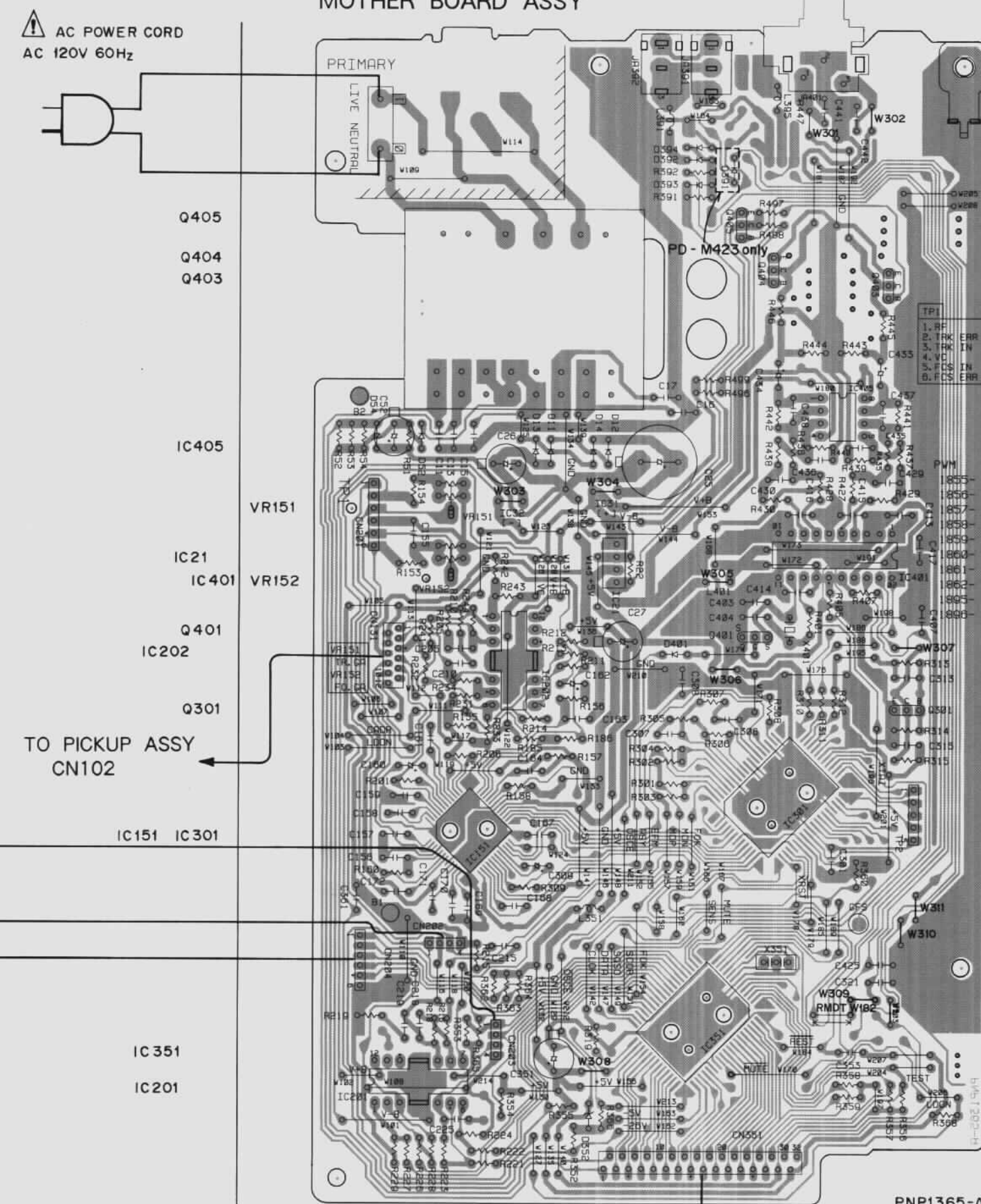


## SELECT BOARD ASSY



PNP1331-A

## MOTHER BOARD ASSY



PNP1365-A





## 7. PCB PARTS LIST

### NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560  $\Omega$   $\rightarrow$   $56 \times 10^1 \rightarrow$  561 ..... RD1/8PM  $\boxed{5} \boxed{6} \boxed{1} \text{J}$

47k  $\Omega$   $\rightarrow$   $47 \times 10^3 \rightarrow$  473 ..... RD1/4PS  $\boxed{4} \boxed{7} \boxed{3} \text{J}$

0.5  $\Omega$   $\rightarrow$  0R5 ..... RN2H  $\boxed{0} \boxed{R} \boxed{5} \text{K}$

1  $\Omega$   $\rightarrow$  010 ..... RS1P  $\boxed{0} \boxed{1} \boxed{0} \text{K}$

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k  $\Omega \rightarrow 562 \times 10^1 \rightarrow$  5621 ..... RN1/4PC  $\boxed{5} \boxed{6} \boxed{2} \boxed{1} \text{F}$

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
<b>LIST OF ASSEMBLIES</b>				<b>CAPACITORS</b>			
$\Delta$		MOTHER BOARD ASSY	PWM1858	C11, C13	CERAMIC CAPACITOR	CKCYF103Z50	
NSP		MECHANISM BOARD ASSY	PWX1279	C15	CERAMIC CAPACITOR	CKCYF103Z50	
NSP	└	LOADING BOARD ASSY	PWZ2038	C155	CERAMIC CAPACITOR	CKCYB561K50	
NSP	└	MOTOR BOARD ASSY	PWZ2040	C156	CERAMIC CAPACITOR	CGCYX333K25	
NSP	└	SELECT BOARD ASSY	PWZ2533	C157	CERAMIC CAPACITOR	CGCYX103K25	
NSP		SUB BOARD ASSY	PWX1336	C158, C159	CERAMIC CAPACITOR	CGCYX104K25	
NSP	└	FUNCTION BOARD ASSY	PWZ2769	C16	CERAMIC CAPACITOR	CKCYF103Z50	
NSP	└	SWITCH BOARD ASSY	PWZ2804	C160	ELECT. CAPACITOR	CEAS4R7M50	
NSP		MECHANISM BOARD ASSY	PWX1192	C161	CERAMIC CAPACITOR	CGCYX104K25	
				C162	ELECT. CAPACITOR	CEAS4R7M50	
				C163	CERAMIC CAPACITOR	CGCYX104K25	
				C164	CERAMIC CAPACITOR	CGCYX103K25	
				C167	CERAMIC CAPACITOR	CKCYF103Z50	
				C168	CERAMIC CAPACITOR	CGCYX333K25	
				C169	CERAMIC CAPACITOR	CGCYX103K25	
				C17	CERAMIC CAPACITOR	CKCYF103Z50	
				C170	CERAMIC CAPACITOR	CKCYB332K50	
				C171	CERAMIC CAPACITOR	CKCYB102K50	
				C172	CERAMIC CAPACITOR	CKCYB472K50	
				C205, C210	CERAMIC CAPACITOR	CKCYF103Z50	
				C215	CERAMIC CAPACITOR	CKCYF103Z50	
				C218	CERAMIC CAPACITOR	CGCYX103K25	
				C219	CERAMIC CAPACITOR	CKCYF103Z50	
				C25	ELECT. CAPACITOR	CEAS332M16	
				C26	ELECT. CAPACITOR	CEAS331M16	
				C27	ELECT. CAPACITOR	CEAS330M16	
				C301	CERAMIC CAPACITOR	CGCYX104K25	
				C306	CERAMIC CAPACITOR	CKCYB152K50	
				C307	CERAMIC CAPACITOR	CGCYX473K25	
				C308	CERAMIC CAPACITOR	CGCYX103K25	
				C309	ELECT. CAPACITOR	CEAS4R7M50	
				C313	CERAMIC CAPACITOR	CCCCH100D50	
				C315	CERAMIC CAPACITOR	CKCYF103Z50	
				C321	CERAMIC CAPACITOR	CCCSL101J50	
				C351	ELECT. CAPACITOR	CEAS471M6R3	
				C353, C361	CERAMIC CAPACITOR	CKCYF103Z50	
				C403, C404	CERAMIC CAPACITOR	CCCCH150J50	
				C407	CERAMIC CAPACITOR	CCCSL101J50	
<b>MOTHER BOARD ASSY</b>							
<b>SEMICONDUCTORS</b>							
	IC151	SERVO IC	CXA1372Q				
$\Delta$	IC201, IC202	POWER OP-AMP IC	LA6520				
$\Delta$	IC21	REGULATOR, IC	PQ05RR12				
	IC301	EFM DEMODULATION IC	CXD2517Q				
	IC351	MICROCOMPUTER IC	PD4520A				
	IC401	CONVERTER IC	TC9268P				
	IC405	OP-AMP IC	NJM4558D-D				
	Q301	TRANSISTOR	2SC3732				
	Q401	N-FET	2SK246				
	Q403, Q404	TRANSISTOR	2SD2144S				
	Q405	TRANSISTOR	DTC124ES				
$\Delta$	D11-D14	DIODE	11ES2				
	D352	ZENER DIODE	MTZJ5.1B				
	D391-D394	DIODE	1SS254				
	D401	DIODE	1SS254				
$\Delta$	D52	DIODE	11ES2				
	D54	ZENNER DIODE	MTZJ18B				
<b>COILS</b>							
	L351	AXIAL INDUCTOR	LAU100K				
	L391	AXIAL INDUCTOR	LAU010K				

Mark	No.	Description	Part No.
	C413-C416	AUDIO FILM CAPACITOR	CFTYA104J50
	C417	CERAMIC CAPACITOR	CKCYF103Z50
	C425	CERAMIC CAPACITOR	CCCSL101J50
	C429, C430	CERAMIC CAPACITOR	CCCCH560J50
	C433, C434	ELECT. CAPACITOR	CEAS220M25
	C435-C438	CERAMIC CAPACITOR	CCCCH390J50
	C441, C442	FILM CAPACITOR (0. 0015/50V)	PCL1030
	C52	ELECT. CAPACITOR	CEAS101M35

**RESISTORS**

VR151, VR152	VR(22K)	PCP1030
OTHER RESISTORS		RD1/6PM□□□J

**OTHERS**

CN131	CONNECTOR	12FMZ-ABT
CN202	CONNECTOR	VKN1051
CN203	CONNECTOR 4P	4-173981-4
CN204	6P JUMPER CONNECTOR	52147-0610
CN351	CONNECTOR 32P	9604S-32C
JA391	JACK(FOR CONTROL IN)	RKN1004
JA392	JACK(FOR CONTROL OUT)	RKN1004
JA401	JACK(FOR LINE OUT)	PKB1009
X351	CERAMIC OSCILLATOR	VSS1028
X401	CRYSTAL OSCILLATOR	PSS1008

△	RAPPING TERMINAL	RKC-061
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**LOADING BOARD ASSY**
**SWITCHES**

S601, S602	PUSH SWITCH	DSG1016
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**OTHERS**

CN601	CONNECTOR 4P	4-173979-4
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**MOTOR BOARD ASSY**
**OTHERS**

CN602	6PJUMPER CONNECTOR	52151-0610
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**SELECT BOARD ASSY**
**SWITCHES**

S603	DETECTOR SWITCH	PSG1010
S604-S606	PUSH SWITCH	DSG1016

**FUNCTION BOARD ASSY**
**SEMICONDUCTORS**

D701-D703	DIODE	ISS133X
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**SWITCHES**

S701-S710	SWITCH	PSG1006
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**OTHERS**

V701	FL INDICATOR TUBE	PEL1084
CN701	CONNECTOR 32P	9604S-32F
REMOTE SENSOR		SBX1785

Mark	No.	Description	Part No.
<b>SWITCH BOARD ASSY</b>			
<b>SWITCHES</b>			
	S801	SWITCH	PSG1006
<b>MECHANISM BOARD ASSY</b>			
<b>OTHERS</b>			
	CN610	CONNECTOR 4P	VKN1061
	S610	PUSH SWITCH	DSG1016

## 8. ADJUSTMENTS

### 8.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

#### ● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6(FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2(TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5(FCS. IN) TP1, Pin 6(FCS. ERR)	VR152(FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3(TRK. IN) TP1, Pin 2(TRK. ERR)	VR151 (TRK. GAN)

#### ● Abbreviation table

FCS. ERR	:Focus Error
TRK. ERR	:Tracking Error
FCS GAN	:Focus Gain
TRK GAN	:Tracking Gain
FCS. IN	:Focus In
TRK. IN	:Tracking In

#### ● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low pass filter (  $39\text{k}\Omega$   $\pm 0.001\ \mu\text{F}$  )
5. Resistor (  $100\text{k}\Omega$  )
6. Standard tools

## ● Test Point and Adjustment Variable Resistor Positions

### MOTHER BOARD ASSY

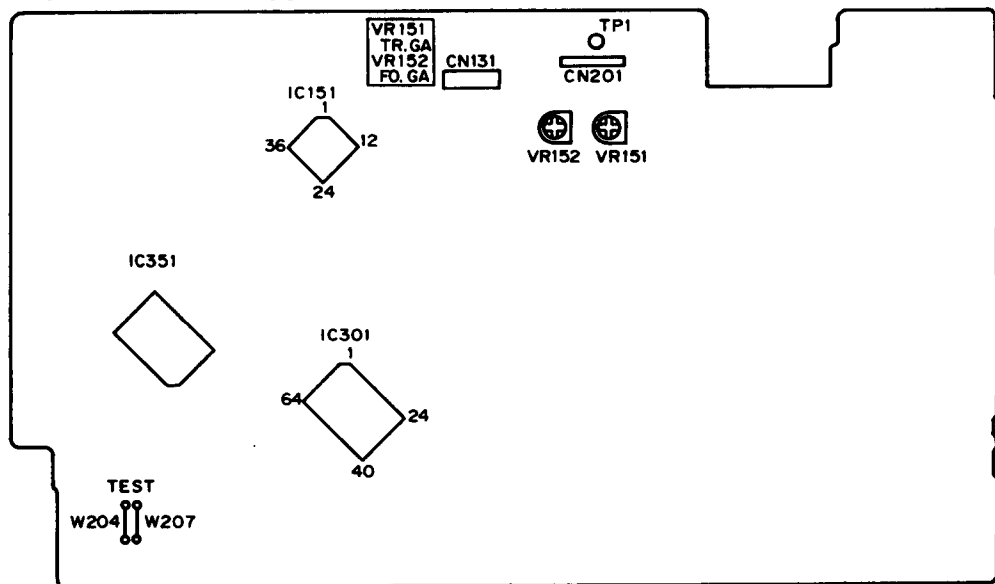


Figure 1. Adjustment Locations

## ● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

## ● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

### [Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.





**[Release from test mode]**

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

**[Operations of the keys in test mode]**

Code	Key Name	Function In Test Mode	Explanation
	PGM (PROGRAM)	Focus servo close	<p>The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo.</p> <p>If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.</p>
▷/	PLAY/PAUSE	Spindle servo ON	<p>Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop.</p> <p>Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed.</p> <p>If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.</p>
		Tracking servo close/open	<p>Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal.</p> <p>If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem.</p> <p>This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.</p>

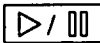

Code	Key Name	Function In Test Mode	Explanation
	TRACK / MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
	TRACK / MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

**Note :** When inserting the magazine, disc 1 of the magazine is loaded automatically.

### [How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.

Here is the key operation sequence for playing back a disc in test mode.

<b>PGM(PROGRAM)</b>	Lights up the laser diode and closes the focus servo.
↓	
	Starts the spindle motor and closes the spindle servo.
↓	
	Closes the tracking servo.

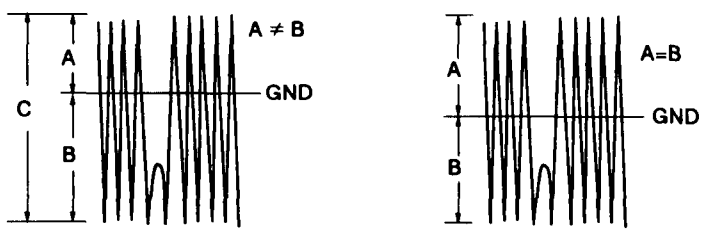
Wait at least 2-3 seconds between each of these operations.

## 1. Focus Offset Verification

● Objective	Verify the DC offset for the focus error amp.		
● Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)	● Player state	Test mode, stopped (just the Power switch on)
	[Settings] 5 mV/division 10 ms/division DC mode	● Adjustment location	None
		● Disc	None needed
<b>[Procedure]</b>  Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is $0 \pm 50$ mV.			

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 – 4, the pickup block may be defective.

## 2. Tracking Error Balance Verification

● Objective	To verify that there is no variation in the sensitivity of the tracking photo diode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter.	● Player state	Test mode, focus and spindle servos closed and tracking servo open
	[Settings] 50 mV/division 5 ms/division DC mode	● Adjustment location	None
		● Disc	YEDS-7
<b>[Procedure]</b>  1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD $\triangleright \triangleright \cdot \triangleright \triangleright$ or REV $\triangleleft \triangleleft \cdot \triangleleft \triangleleft$ key. 2. Press the PGM (PROGRAM) key, then the PLAY/PAUSE $\triangleright / \square$ key in that order to close the focus servo then the spindle servo. 3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode. 4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.			
When $A \geq B$ , $\frac{A-B}{C} \times \frac{1}{2} \leq 0.1$ When $A < B$ , $\frac{B-A}{C} \times \frac{1}{2} \leq 0.1$		 <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>When there is a DC component</p> </div> <div style="text-align: center;"> <p>When there is no DC component</p> </div> </div>	

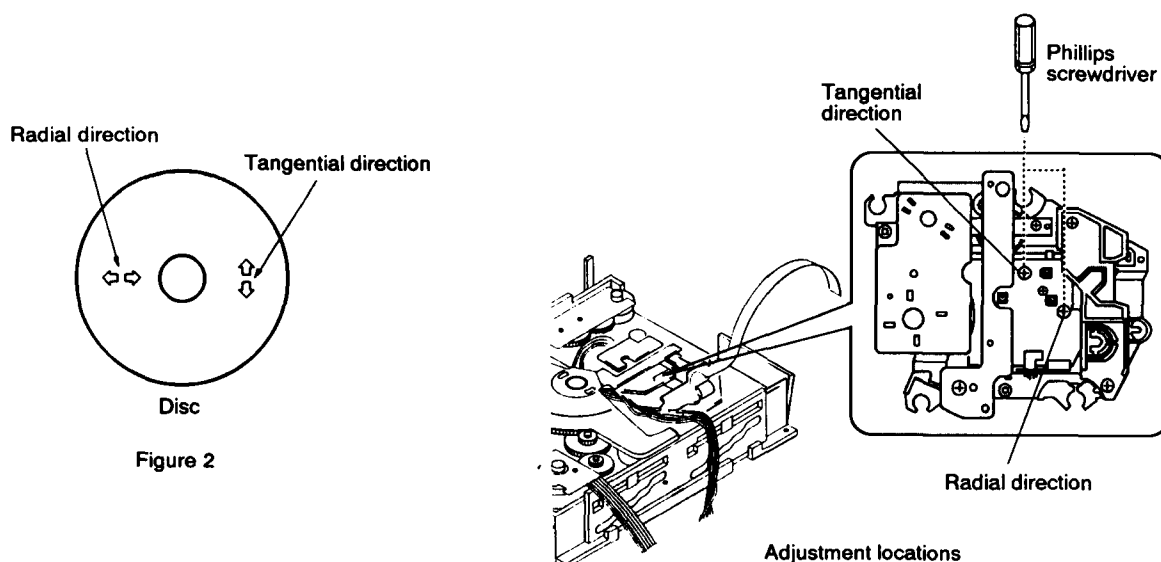
### 3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken; some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF).	● Player state	Test mode, play
	[Settings] 20 mV/division 200 ns/division AC mode	● Adjustment location	Pickup radial tilt adjustment screw and tangential tilt adjustment screw
		● Disc	YEDS-7

#### [Procedure]

1. Press the TRACK / MANUAL SEARCH FWD  $\triangleright \triangleright$  •  $\triangleright \triangleright$  or REV  $\triangleleft \triangleleft$  •  $\triangleleft \triangleleft$  key to move the pickup to halfway across the disc (R=35mm).  
Press the PGM (PROGRAM) key, the PLAY/PAUSE  $\triangleright / \square$  key twice in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

**Note:** Radial and tangential mean the directions relative to the disc shown in Figure 2.





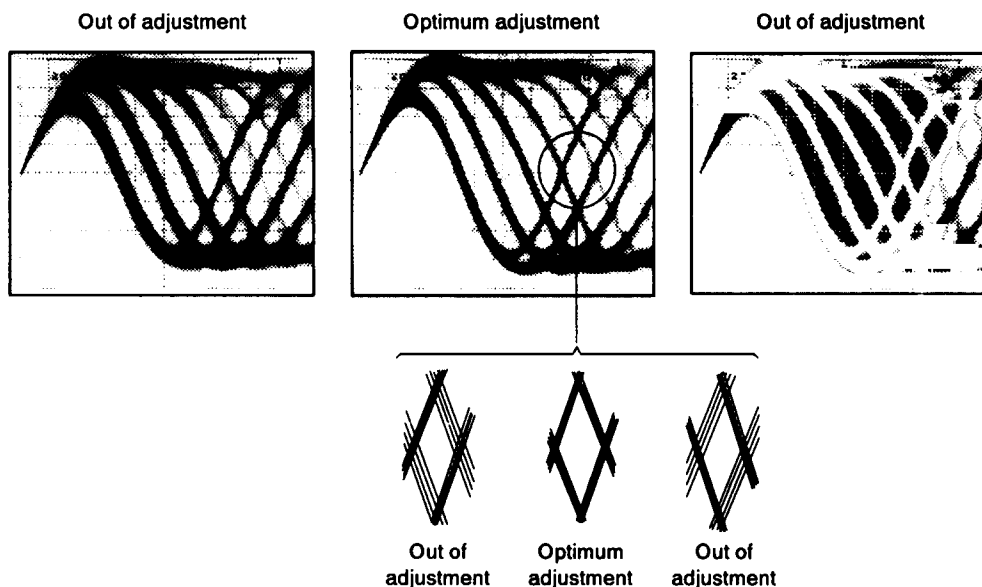


Figure 3. Eye pattern

#### 4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF).	● Player state	Test mode, play
	[Settings] 50 mV/division 10 ms/division AC mode	● Adjustment location	None
		● Disc	YEDS-7

##### [Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the TRACK/MANUAL SEARCH FWD  $\triangleright \triangleright \cdot \triangleright \triangleright$  or REV  $\triangleleft \triangleleft \cdot \triangleleft \triangleleft$  key, then press the PGM (PROGRAM) key, the PLAY/PAUSE  $\triangleright / \square$  key twice in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is  $1.2 \text{ Vp-p} \pm 0.2 \text{ V}$ .

5. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4.	● Player state	Test mode, play
	[Settings]	● Adjustment location	VR152 (FCS. GAN)
	CH1                      CH2 20 mV/division    5 mV/division X - Y mode	● Disc	YEDS-7

[Procedure]

- 1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
- 2. Press the TRACK / MANUAL SEARCH FWD >>> • >>> or REV <<< • <<< key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY/PAUSE ▷ / ▢ key twice in that order to close the corresponding servos and put the player into play mode.
- 3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

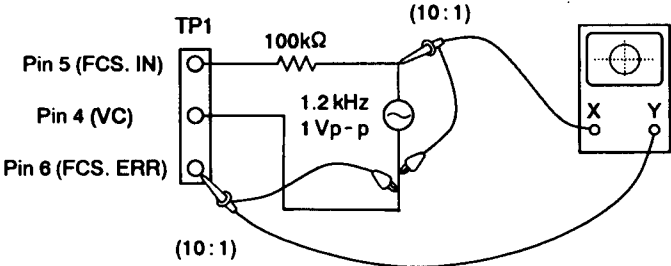
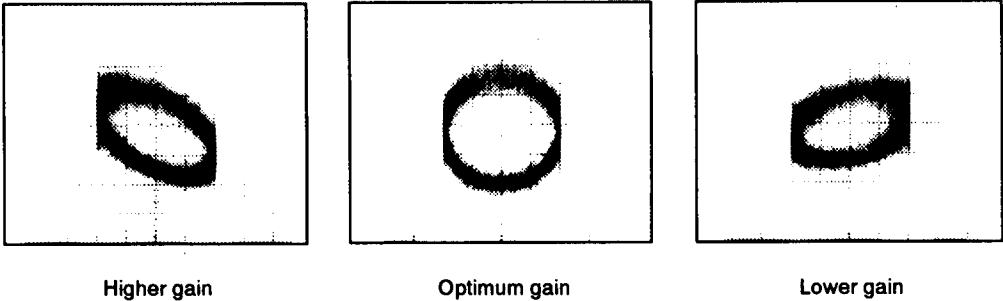


Figure 4

Focus Gain Adjustment



6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instru- ment connections	See Figure 5.	● Player state	Test mode, play
	[Settings] CH1                      CH2 50 mV/division   20 mV/division X - Y mode	● Adjustment location  ● Disc	VR151 (TRK. GAN)  YEDS-7

[Procedure]

- 1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
- 2. Press the TRACK/MANUAL SEARCH FWD  $\triangleright \triangleright$  •  $\triangleright \triangleright$  or REV  $\triangleleft \triangleleft$  •  $\triangleleft \triangleleft$  key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY/PAUSE  $\triangleright$  /  $\square$  key twice in that order to close the corresponding servos and put the player into play mode.
- 3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

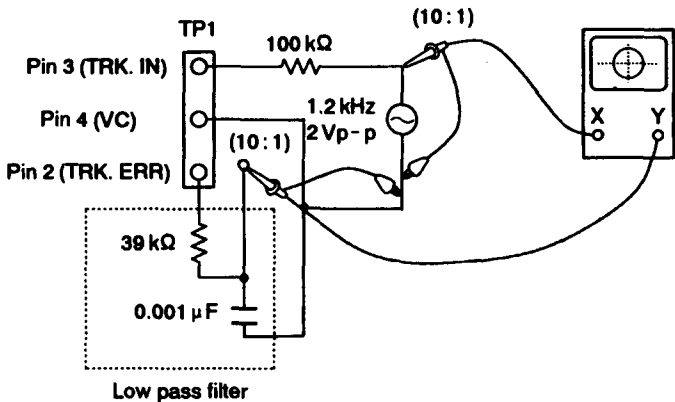
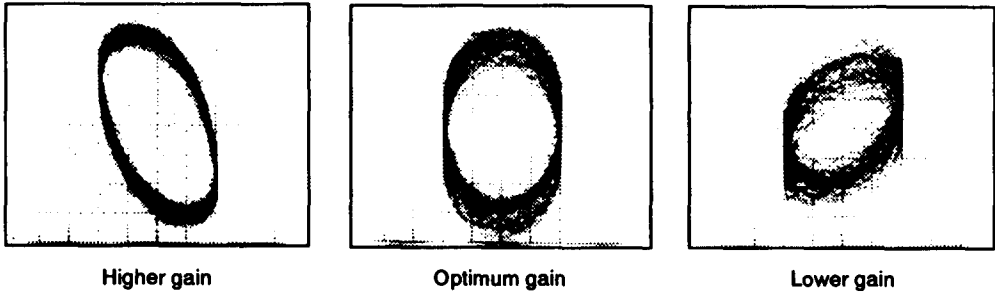


Figure 5

Tracking Gain Adjustment



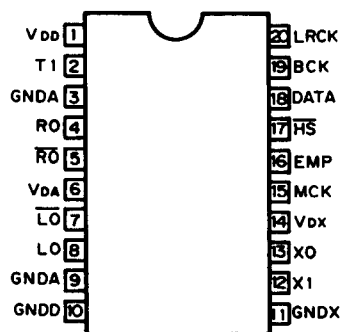
## 9. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

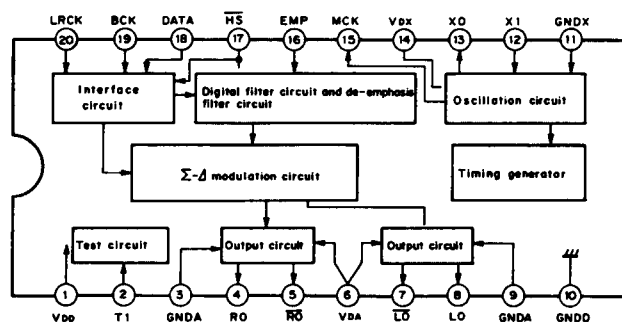
### ■ TC9268P (IC401)

D/A Converter IC

#### ● Pin Arrangement (Top view)



#### ● Block Diagram




#### ● Pin Functions

Pin No.	Symbol	I/O	Function
1	VDD	—	Power supply pin of digital section.
2	T1	I	Test pin. Normally "L".
3	GNDA	—	Ground pin of analog section for R channel.
4	RO	O	R channel data normal output pin.
5	RO	O	R channel data inversion output pin.
6	VDA	—	Power supply pin of analog section.
7	LO	O	L channel data inversion output pin.
8	LO	O	L channel data normal output pin.
9	GNDA	—	Ground pin of analog section for L channel.
10	GNDD	—	Ground pin of digital section.
11	GNDX	—	Ground pin of crystal oscillation section.
12	X1	I	Connected to crystal oscillator. Generates clock required for the system.
13	XO	O	
14	VDX	—	Power supply pin of crystal oscillation section.
15	MCK	O	System clock output pin.
16	EMP	I	De-emphasis filter control pin. De-emphasis filter on at "H". De-emphasis filter off at "L".
17	HS	I	Normal speed/ $\times 2$ speed selection pin. "H": Normal speed, "L": $\times 2$ speed.
18	DATA	I	Data input pin.
19	BCK	I	Bit clock input pin.
20	LRCK	I	LR clock input pin.

# **PD4520A (IC351)** **System Control**

## **● Pin Functions**

Pin No.	Symbol	Name	Function	I/O	Reset	Potential	
1	RESET	REST	CPU reset ("L" : Reset)	—	—	—	
2	T0	G1	DIGIT output for FL driving.	O	-26V		Built-in pull-down resistor
3	T1	G2					
4	T2	G3					
5	T3	G4					
6	T4	G5					
7	T5	G6					
8	T6	G7					
9	T7	G8					
10	T8	G9					
11	T9	Not used	NC (open)	O	—	—	
12	PH3	MUTE	Muting output. ("L" : Mute, "H" OFF)	O	—	L	
13	PH2	SYC3	Sync output.	O	—	L	
14	PH1	OSCE	OSCE output. ("L" : Oscillation, "H" : Stop)	O	—	L	
15	PH0	STBL	Standby LED output. ("L" : OFF, "H" : Light)	O	—	L	
16	S11	SEG l	SEGMENT output for FL driving.	O	-26V	-26V	Built-in pull-down resistor
17	S10	SEG k					
18	Vload		-26V	—	—	—	
19	Vpre		-5V	—	—	—	
20	S9	SEG j	SEGMENT output for FL driving.	O	-26V	-26V	
21	S8	SEG i					
22	S7	SEG d					
23	S6	SEG c					
24	S5	SEG b					
25	S4	SEG a					
26	VDD	VDD	+5V	—	—	—	
27	S3	SEG h	SEGMENT output for FL driving.	O	-26V	-26V	
28	S2	SEG g					
29	S1	SEG f					
30	S0	SEG e					
31	P00	SYC l	Sync input.	I	—	—	
32	SCK	CLOK	Serial clock.	O	—	H	

### (Disc Selector UP/DOWN)

Selector	UP DOWN Stop	DSDW	DSUP
		L H L	H L L

### (Loading Selector)

Tray	IN OUT Stop	LOUT	LIN
		L H L	H L L

Pin No.	Symbol	Name	Function	I/O	Reset	Potential
33	S0	DATA	LSI control data serial output.	O	—	H
34	S1	SQSO	Subcode Q data serial input.	I	—	—
35	INT 0	RMDT	Remote control data input.	I	—	—
36	INT 1	SCOR	Subcode sync S0+S1 input.	I	—	—
37	P12	INSD	Slider inside SW input. ("L" : INSIDE)	I	—	—
38	P13	FOCK	Focus OK input ("H" : OK, "L" : NG)	I	—	—
39	P20	LIN	Disk tray IN/OUT. (See page 35)	O	—	L
40	P21	LOUT		O	—	L
41	P22	DSDW	Disk selector UP/DOWN. (See page 35)	O	—	L
42	P23	DSUP		O	—	L
43	P30	LPS2	Load position SW input. (See the following)	I	—	—
44	P31	LPS1		I	—	—
45	P32	DCNT	DISC selector count pulse. (See the following)	I	—	—
46	P33	DCHM	DISC selector home. (See the following)	I	—	—
47	P60	MZS2	Magazine discrimination SW input. (See the following)	I	—	—
48	P61	MZS1		I	—	—
49	S62	SENS	LSI operation condition multi mode input.	I	—	—
50	S63	GFS	Frame sync lock input. ("H" : OK, "L" : NG)	I	—	—
51	P40	MUTE	Muting output. ("H" : Mute, "L" : OFF)	O	—	H
52	P41	DEMP	De-emphasis output. ("H" : ON)	O	—	L
53	P42	XLAT	LSI control data latch pulse.	O	—	H
54	P43	XRST	LSI reset. ("L" : RESET, "H" : Release)	O	—	L
55	PPO	LDON	Laser diode output. ("H" : OFF, "L" : ON)	O	—	H
56	X1	X1	Main system clock oscillation. (4.194304 MHz)	—	—	—
57	X2	X2		—	—	—
58	VSS	VSS	GND	—	—	—
59	XT1	Not used	GND (Vss)	—	—	—
60	XT2	Not used	NC (open)	—	—	—
61	P50	KD 0/TEST	Key scan input and TEST mode request input.	I	—	—
62	P51	KD1	Key scan input.	I	—	—
63	P52	KD2				
64	P53	KD3				

**(Magazine Discrimination)**

Magazine OUT IN Multi IN Single	MZS 1	MZS 2
	H	*
	L	H
	L	L

**(DISC Select)**

2 to 6 DISCS HOME During selecting	DCNT	DCHM
	L	H
	L	L
	H	*

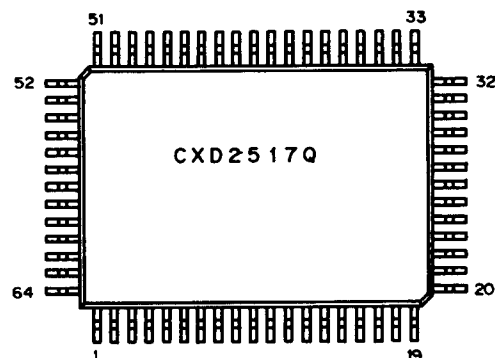
**(Load Position SW)**

CLAMP LOADING HOME EJECT	LPS	LPS
	L	L
	L	H
	H	H

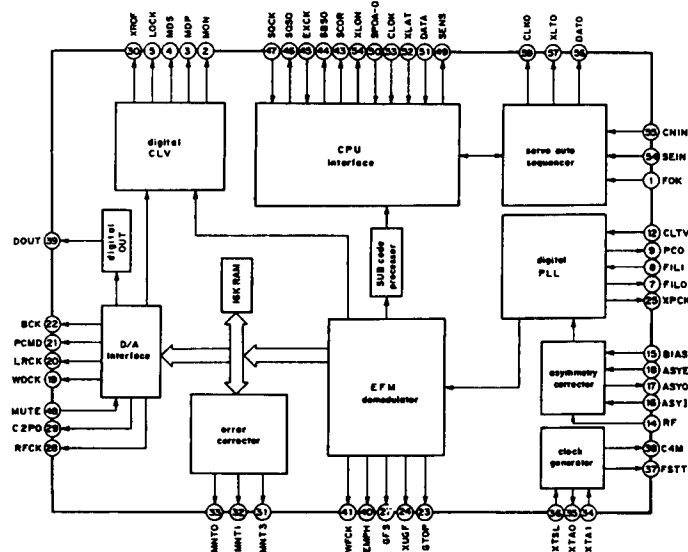
# ■ CXD2517Q (IC301)

## EFM Demodulator IC

### ● Pin Arrangement (Top view)



### ● Block Diagram



### ● Pin Functions

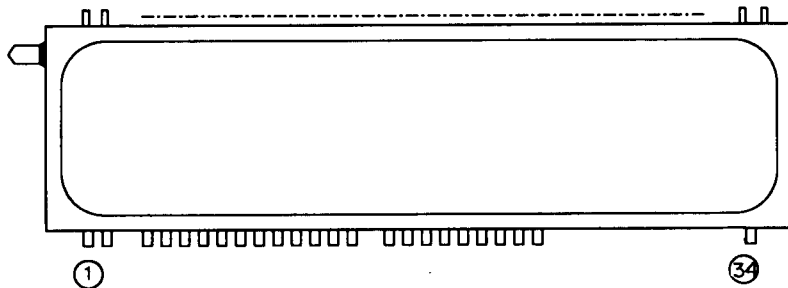
Pin No.	Symbol	I/O	Function
1	FOK	I	Focus OK input pin. Used for SENS output and servo auto sequence.
2	MON	O	ON/OFF control output for spindle motor.
3	MDP	O	Spindle motor servo control.
4	MDS	O	Spindle motor servo control.
5	LOCK	O	High output GFS is sampled at 460 Hz and that is High; Low output when GFS is sampled 8 times and that is Low.
6	TEST	I	Test pin, normally GND.
7	FILO	O	Filter output for master PLL. (slave=digital PLL)
8	FILI	I	Master PLL filter input.
9	PCO	O	Master PLL charge pump output.
10	Vss	-	GND
11	AVss	-	Analog GND
12	CLTV	I	Master VCO control voltage input.
13	AVDD	-	Analog power supply. (+5V)
14	RF	I	EFM signal input.
15	BIAS	I	Asymmetry circuit constant current input.
16	ASYI	I	Asymmetry comparator voltage input.
17	ASYO	O	EFM full-swing output. (Low=Vss, High=VDD)
18	ASYE	I	"L": Asymmetry circuit OFF, "H": Asymmetry circuit ON.
19	WDCK	O	D/A interface. Word clock f=2 Fs.
20	LRCK	O	D/A interface. LR clock F=FS.
21	PCMD	O	D/A interface. Serial data. (2's COMP, MSB fast)
22	BCK	O	D/A interface. Bit clock.
23	GTOP	O	GTOP output.
24	XUGF	O	XUGF output.
25	XPCK	O	XPLCK output.

Pin No.	Symbol	I/O		Function
26	VDD	–	–	Power supply . (+5V)
27	GFS	O	1, 0	GFS output.
28	RFCK	O	1, 0	RFCK output.
29	C2PO	O	1, 0	C2PO output.
30	XROF	O	1, 0	XRAOF output.
31	MNT3	O	1, 0	MNT3 output.
32	MNT1	O	1, 0	MNT1 output.
33	MNT0	O	1, 0	MNT0 output.
34	XTAI	I	–	Crystal oscillator circuit input. 16.9344 MHz or 33.8688 MHz input.
35	XTAO	O	1, 0	16.9344 MHz crystal oscillation circuit output.
36	XTSL	I	–	Crystal selection input. Low for 16.9344 MHz crystal; High for 33.8688 MHz crystal.
37	FSTT	O	1, 0	2/3 frequency divider input of Pins 34 and 35.
38	C4M	O	1, 0	4.2336 MHz output.
39	DOUT	O	1, 0	Digital Out output.
40	EMPH	O	1, 0	Playback disc emphasis mode output. (Low for no emphasis applied; High for emphasis applied)
41	WFCK	O	1, 0	WFCK output.
42	VSS	–	–	GND
43	SCOR	O	1, 0	Subcode sync output. (High for subcode sync S0 or S1 detected)
44	SBSO	O	1, 0	Sub P to W serial output.
45	EXCK	I	–	SBSO readout clock input.
46	SQSO	O	1, 0	Sub Q 80-bit serial output.
47	SQCK	I	–	SQSO readout clock input.
48	MUTE	I	–	"H": Mute, "L": Release.
49	SENS	O	1, 0	SENS output .(Output to CPU)
50	XRST	I	–	System reset .(Low for reset)
51	DATA	I	–	Serial data input from CPU.
52	XLAT	I	–	Latch input from CPU. Latches serial data at falling edge.
53	CLOCK	I	–	Serial data transfer clock input from CPU.
54	SEIN	I	–	Sense input from SSP.
55	CNIN	I	–	Track jump number count signal input.
56	DATO	O	1, 0	Serial data output to SSP.
57	XLTO	O	1, 0	Serial data latch output to SSP. Latches at falling edge.
58	VDD	–	–	Power supply . (+5V)
59	CLKO	O	1, 0	Serial data transfer clock output to SSP.
60	SPOA	I	–	Microprocessor extension interface. (input A)
61	SPOB	I	–	Microprocessor extension interface. (input B)
62	SPOC	I	–	Microprocessor extension interface. (input C)
63	SPOD	I	–	Microprocessor extension interface. (input D)
64	XLON	O	1, 0	Microprocessor extension interface. (output)



## 10. FL INFORMATION

### ■ PEL1084 (V701)

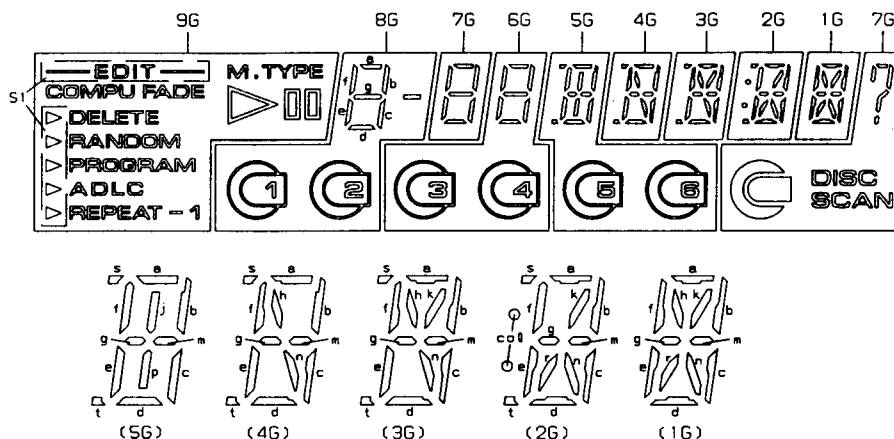


### PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
CONNECTION	F	F	N	P	P	P	P	P	P	P	P	P	P	P	P	N	9	8	7	6	5	4	3	2	1	N	N	N	N	N	N	N	N	N	F
	1	1	P	1	2	3	4	5	6	7	8	9	0	1	2	X	G	G	G	G	G	G	G	G	X	X	X	X	X	X	P	X	P	X	2

NOTE 1) F1, F2 --- Filament 4) 1G~9G --- Grid  
 2) NP ----- No pin  
 3) NX ----- No extend pin

### GRID ASSIGNMENT



### ANODE CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	<b>RANDOM</b>	e	e	e	e	e	e	e	e
P2	<b>FADE</b>	f	f	f	f	f	f	f	f
P3	<b>COMPU</b>	g	g	g	g, m	g	g, m	g, m	g
P4	<b>00</b>	=	?	-	s, t	m	s, t	s, t	m
P5	<b>M. TYPE</b>	a	a	a	a	a	a	a	a
P6	<b>S1</b>	b	b	b	b	b	b	b	b

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P7	<b>DELETE</b>	c	c	c	c	c	c	c	c
P8	<b>PROGRAM</b>	d	d	d	d	d	d	d	d
P9	<b>▶</b>	-	<b>DISC</b>	-	j, p	h	h	col	h
P10	<b>ADLC</b>	-	<b>SCAN</b>	-	-	s	k	k	k
P11	<b>-1</b>	<b>C1</b>	<b>C</b>	<b>C3</b>	<b>C5</b>	n	n	n	n
P12	<b>REPEAT</b>	<b>C2</b>	<b>C</b>	<b>C4</b>	<b>C6</b>	t	-	r	r

# 11. FOR PD-M423/KCXJ, PD-M403/KUXJ AND KCXJ

## CONTRAST OF MISCELLANEOUS PARTS

### NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

**PD-M423/KCXJ, PD-M403/KUXJ, KCXJ and PD-M423/KUXJ have the same construction except for the following:**

Mark	Symbol and Description	Part No.				Remarks
		PD-M423/ KUXJ	PD-M423/ KCXJ	PD-M403/ KUXJ	PD-M403/ KCXJ	
NSP	Mother Board Assy Sub Board Assy Function Board Assy	PWM1858 PWX1336 PWZ2769	PWM1858 PWX1336 PWZ2769	PWM1856 PWX1334 PWZ2768	PWM1856 PWX1334 PWZ2768	
$\Delta$ $\Delta$	Power Cord with Plug Strain Relief 32P F.F.C/30V (J701) 30P F.F.C/30V (J701) Display Window	PDG1015 CM - 22C PDD1041 Not Used PAM1635	RDG1010 CM - 22 PDD1041 Not Used PAM1635	PDG1015 CM - 22C Not Used PDD1049 PAM1634	RDG1010 CM - 22 Not Used PDD1049 PAM1634	
NSP	Function Panel Rear Base 65 Label Remote Control Unit Battery Cover	PNW2387 PNA2068 ORW1069 PWW1089 PZN1010	PNW2387 PNA2069 Not Used PWW1089 PZN1010	PNW2389 PNA2071 ORW1069 Not Used Not Used	PNW2389 PNA2072 Not Used Not Used Not Used	
NSP	Battery (R03, AAA) Operating Instructions (English) Operating Instructions (English/French) Packing Case	VEM - 022 PRB1205 Not Used PHG1999	VEM - 022 Not Used PRE1191 PHG2000	Not Used PRB1205 Not Used PHG2002	Not Used Not Used PRE1191 PHG2003	

### MOTHER BOARD ASSY

**PWM1856 and PWM1858 have the same construction except for the following:**

Mark	Symbol and Description	Part No.		Remarks
		PWM1858	PWM1856	
	D391 CN351 (Connector 32P) CN351 (Connector 30P)	1SS254 9604S - 32C Not Used	Not Used Not Used 9604S - 30C	

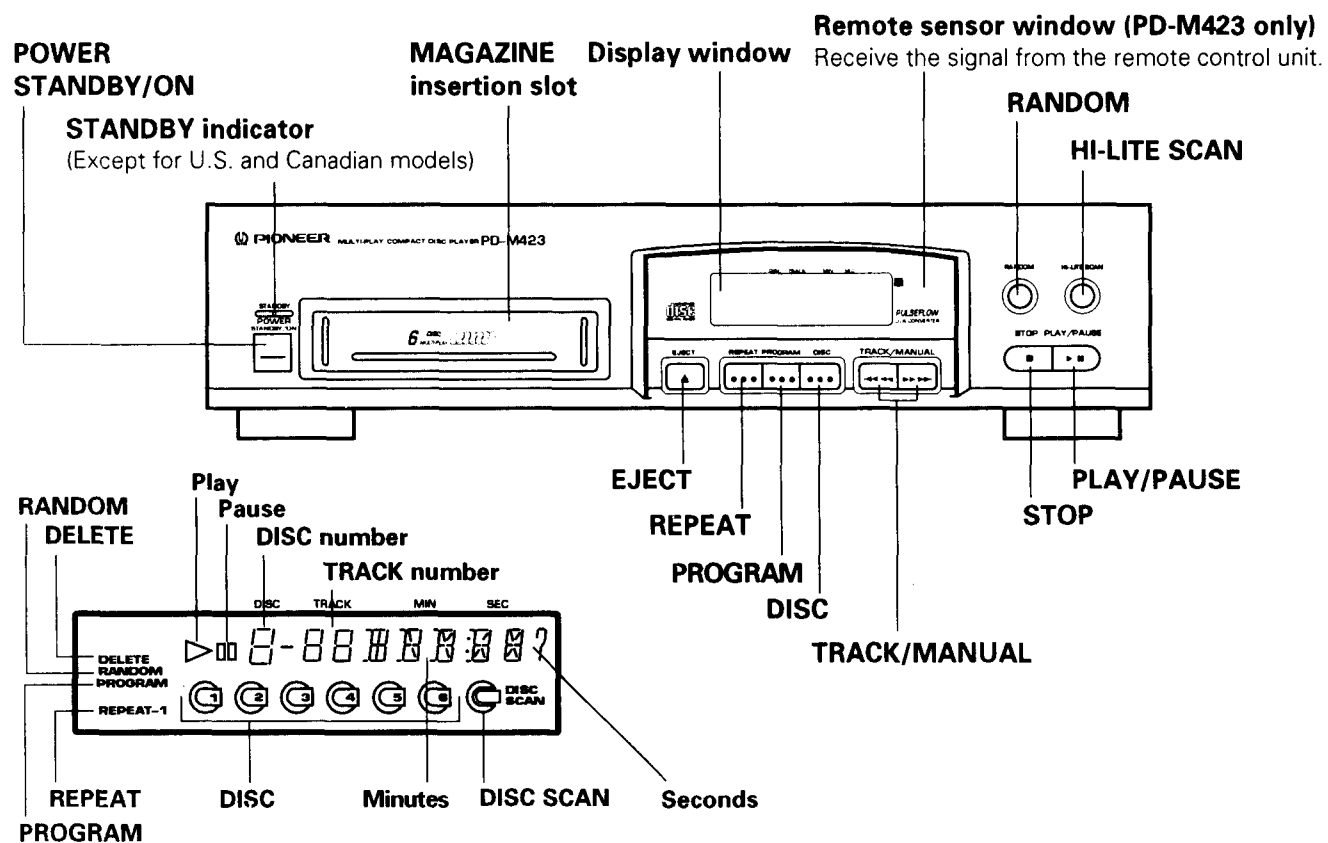
### FUNCTION BOARD ASSY

**PWZ2768 and PWZ2769 have the same construction except for the following:**

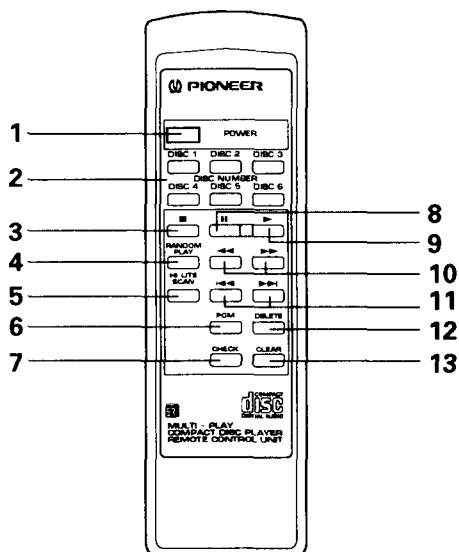
Mark	Symbol and Description	Part No.		Remarks
		PWZ2769	PWZ2768	
	Remote Sensor CN701 (Connector 32P) CN701 (Connector 30P)	SBX1785 - 51 9607S - 32F Not Used	Not Used Not Used 9607S - 30F	

## 12. PANEL FACILITIES

### FRONT PANEL



### REMOTE CONTROL UNIT (PD-M423 only)



Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

- 1 POWER button
- 2 DISC NUMBER buttons (DISC 1-DISC 6)
- 3 STOP button (■)
- 4 RANDOM PLAY button
- 5 HI-LITE SCAN button
- 6 PGM (program) button
- 7 CHECK button
- 8 PAUSE button
- 9 PLAY button (▶)
- 10 MANUAL search buttons (◀◀, ▶▶)
- 11 TRACK search buttons (◀◀, ▶▶)
- 12 DELETE button
- 13 CLEAR button

# 13. SPECIFICATIONS

## General

Type .....	Compact disc digital audio system
Power requirements	
U.S. model .....	AC 120 V, 60 Hz
U.K. and Australian models .....	AC 220-240 V, 50/60Hz
Power consumption	
U.S.model .....	10 W
U.K. and Australian models .....	12 W
Operating temperature .....	+5°C-+35°C
	(+41°F- +95°F)
Weight (without package) .....	3.7 kg (8 lb, 3 oz)
External dimensions .....	420(W) x 294 (D) x 105 (H) mm
	16-9/16 (W) x 11-9/16 (D) x 4-1/8 (H) in

## Audio section

Frequency response .....	2 Hz – 20 kHz
S/N ratio .....	98dB or more (EIAJ)
Dynamic range .....	95dB or more (EIAJ)
Harmonic distortion .....	0.005% or less (EIAJ)
Output voltage .....	2.0 V
Wow and flutter .....	Limit of measurement
	(0.001% W.PEAK) or less (EIAJ)
Channels .....	2-channel (stereo)


## Output terminal

Audio line output  
Control input/output jacks (Except for PD-M423 of Australian model.)

## Accessories

- Remote control unit (PD-M423 only) ..... 1
- Size AAA/R03 dry batteries (PD-M423 only) ..... 2
- Six-compact-disc magazine ..... 1
- Control cable (Except for PD-M423 of Australian model) ..... 1
- Output cable ..... 1
- Operating instructions ..... 1

*Specifications and design subject to possible modification without notice, due to improvements.*

The Magazine Type Multi-Play CD Players with  mark and the Magazines with the same mark are compatible for 5 inch (12 cm) discs.

# Service Manual

W

ORDER NO.  
RRV1090

MULTI-PLAY COMPACT DISC PLAYER

# PD-M423

## PD-M403

- Refer to the service manual RRV1062 for PD-M423/KUXJ.

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	The voltage can be converted by the following method.
	PD-M423	PD-M403		
WPW	○	—	AC220 — 240V	————
RD	—	○	AC110 — 127V/220 — 240V	With the voltage selector
RDXJ	—	○	AC110 — 127V/220 — 240V	With the voltage selector
WL	—	○	AC220 — 240V	————

# 1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

**VARO!**

AVATTAESSA JA SUOJALUKITUS  
OHITETTAESSA OLET ALTTIINA  
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.  
ÄLÄ KATSO SÄTEESEEN.

**ADVERSEL:**

USYNLIG LASERSTRÅLING VED ÅBNING  
NÅR SIKKERHEDSAFBRYDERE ER UDE AF  
FUNKTION. UNDGÅ UDSÆTTELSE FOR  
STRÅLING.

**VARNING!**

OSYNLIG LASERSTRÅLNING NÅR DENNA  
DEL ÄR ÖPPNAD OCH SPÄRREN  
ÄR URKOPPLAD. BETRÄKTA EJ STRÅLEN



LASER  
Kuva 1  
Lasersäteilyn  
varoituserkki

**WARNING!**

DEVICE INCLUDES LASER DIODE WHICH  
EMITS INVISIBLE INFRARED RADIATION  
WHICH IS DANGEROUS TO EYES. THERE IS  
A WARNING SIGN ACCORDING TO PICTURE  
1 INSIDE THE DEVICE CLOSE TO THE LASER  
DIODE.



LASER  
Picture 1  
Warning sign for  
laser radiation

**IMPORTANT**

THIS PIONEER APPARATUS CONTAINS  
LASER OF CLASS 1.  
SERVICING OPERATION OF THE APPARATUS  
SHOULD BE DONE BY A SPECIALLY  
INSTRUCTED PERSON.

**LASER DIODE CHARACTERISTICS**

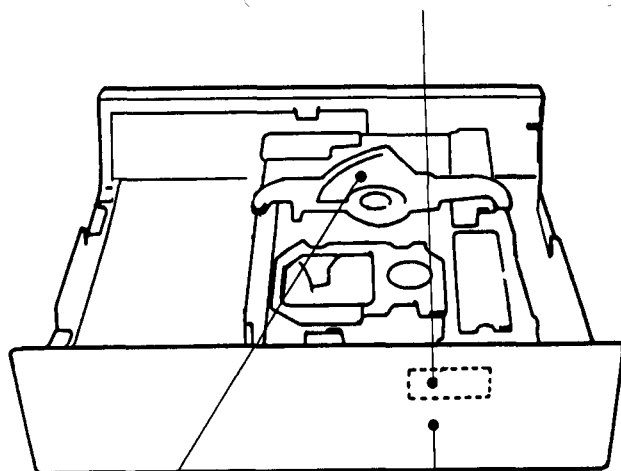
MAXIMUM OUTPUT POWER: 5 mw  
WAVELENGTH: 780-785 nm

## LABEL CHECK (MULTI MAGAZINE type)

WL type

**CAUTION**  
INVISIBLE LASER  
RADIATION WHEN OPEN,  
AVOID EXPOSURE  
TO BEAM

PRW1018



WL type

**CLASS 1  
LASER PRODUCT**

VRW-328

WL type

**Additional Laser Caution**

**1. Laser Interlock Mechanism**

The ON/OFF (ON : low level, OFF : high level) status of S601 (LPS1) and S602 (LPS2) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation except when both switches S601 and S602 are ON (low level or clamped state). Thus, interlock will no longer function if switches S601 (LPS1) and S602 (LPS2) are deliberately shorted (low level). The interlock also does not function in the test mode \*.

Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE AMP BOARD ASSY mounted on the pickup assembly is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

**2. When the cover is opened with the servo mechanism block removed and turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.**

'92M1B

\* Refer to page 26 on the service manual RRV1062.

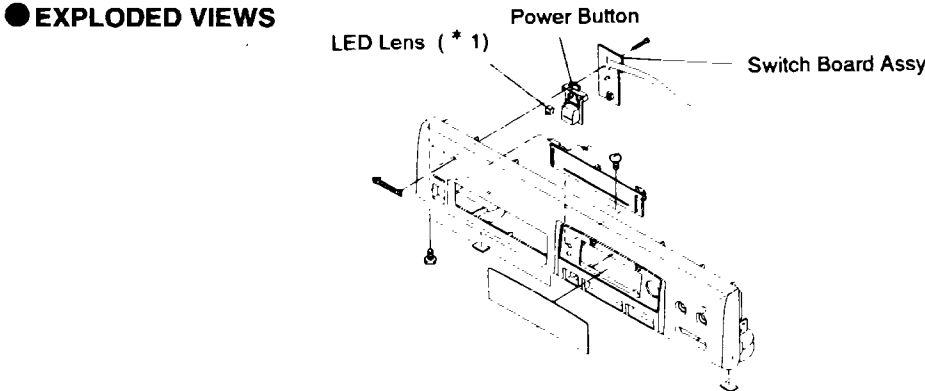
2. CONTRAST OF MISCELLANEOUS PARTS

- NOTES:
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
  - The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
  - Parts marked by “⊙” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

■ CONTRAST OF PD-M423/WEMXJ, WPWXJ, PD-M403/WEMXJ, WLXJ and PD-M423/KUXJ

PD-M423/WEMXJ, WPWXJ, PD-M403/WEMXJ, WLXJ and PD-M423/KUXJ have the same construction except for the following.

Mark	Symbol & Description	Part No.					Remarks
		PD-M423/ KUXJ	PD-M423/ WEMXJ	PD-M423/ WPWXJ	PD-M403/ WEMXJ	PD-M403/ WLXJ	
Δ	Mother Board Assy	PWM1858	PWM1896	PWM1896	PWM1895	PWM1895	
NSP	Sub Board Assy	PWX1336	PWX1337	PWX1337	PWX1335	PWX1335	
	Function Board Assy	PWZ2769	PWZ2769	PWZ2769	PWZ2768	PWZ2768	
NSP	Switch Board Assy	PWZ2804	PWZ2805	PWZ2805	PWZ2805	PWZ2805	
Δ	Power Cord with Plug	PDG1015	PDG1003	RDG1022	PDG1003	PDG1003	
Δ	Strain Relief	CM-22C	CM-22B	CM-22B	CM-22B	CM-22B	
Δ	Power Transformer (AC120V)	PTT1237	Not Used	Not Used	Not Used	Not Used	
Δ	Power Transformer (AC220 – 240V)	Not Used	PTT1236	PTT1236	PTT1236	PTT1236	
	32P F.F.C/30V (J701)	PDD1041	PDD1041	PDD1041	Not Used	Not Used	
	30P F.F.C/30V (J701)	Not Used	Not Used	PDD1049	PDD1049	PDD1049	* 1
	Display Window	PAM1635	PAM1671	PAM1635	PAM1670	PAM1634	
	Function Panel	PNW2387	PNW2567	PNW2388	PNW2566	PNW2390	
	LED Lens	Not Used	PNW2019	PNW2019	PNW2019	PNW2019	
NSP	Rear Base	PNA2068	PNA2199	PNA2202	PNA2198	PNA2203	
	Foot Assy	AEC1531	Not Used	AEC1531	Not Used	AEC1531	Front and Rear Leg
	Rubber Sheet	AEB1111	Not Used	AEB1111	Not Used	AEB1111	
	Insulator	Not Used	PNW1912	Not Used	PNW1912	Not Used	
	65 Label	ORW1069	Not Used	Not Used	Not Used	Not Used	
NSP	Caution Label	Not Used	VRW1094	Not Used	VRW1094	PRW1018	
	Caution Label (F)	Not Used	VRW-328	Not Used	VRW-328	VRW-328	Refer to page 2
	Caution Label (G)	Not Used	VRW-329	Not Used	VRW-329	VRW-329	Refer to page 2
	Caution Label HE	Not Used	PRW1233	Not Used	PRW1233	Not Used	Refer to page 2
	Connection Cord with Mini Plug (for SR cord)	PDE-319	Not Used	Not Used	PDE1247	PDE1247	
	Connection Cord with Pin Plug (for AUDIO)	PDE1109	PDE1248	PDE1248	PDE1248	PDE1248	
	Remote Control Unit	PWW1107	PWW1107	PWW1107	Not Used	Not Used	
	Battery Cover	PZN1010	PZN1010	Not Used	Not Used	Not Used	
	Battery (R03, AAA)	VEM-022	VEM-022	VEM-022	Not Used	Not Used	
	Operating Instructions (English)	PRB1231	PRB1231	Not Used	PRB1231	Not Used	
	Operating Instructions (French/German/Italian/Dutch/Swedish/Spanish/Portuguese)	Not Used	PRD1004	Not Used	PRD1004	Not Used	
	Operating Instructions (English/Spanish/Chinese)	Not Used	Not Used	Not Used	Not Used	PRE1214	
	Packing Case	PHG1999	PHG2108	PHG2120	PHG2107	PHG2121	



MOTHER BOARD ASSY

PWM1896, PWM1895 and PWM1858 have the same construction except for the following :

Mark	Symbol & Description	Part No.			Remarks
		PWM1858	PWM1896	PWM1895	
	IC31	Jumper	ICP-N10	ICP-N10	* 2
	D391	1SS254	Not Used	Nto Used	
	D392 - D394	1SS254	Not Used	1SS254	
	L351	LAU100K	LAU100J	LAU100J	
	L391	LAU010K	Not Used	LAU010J	
	C29, C302	Not Used	CFTYA104J50	CFTYA104J50	* 2
	C321	CCCSL101J50	Not Used	CCCSL101J50	
	C410	Not Used	CCCSL101J50	CCCSL101J50	
	R316	Not Used	RD1/6PM471J	RD1/6PM471J	
	R351	Not Used	RD1/6PM471J	RD1/6PM471J	
	R391	RD1/6PM244J	Not Used	RD1/6PM244J	* 2
	R392	RD1/6PM102J	Not Used	RD1/6PM102J	
	CN351 (Connector 32P)	9604S - 32C	9604S - 32C	Not Used	
	CN351 (Connector 30P)	Not Used	Not Used	9604S - 30C	
	JA391, JA392	RKN1004	Not Used	RKN1004	

Note : \* 2 : Refer to “ 3. SCHEMATIC DIAGRAM ” and “ 4. PCB DIAGRAM ”.

FUNCTION BOARD ASSY

PWZ2768 and PWZ2769 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		PWZ2769	PWZ2768	
	CN701 (Connector 32P)	9607 - 32F	Not Used	
	CN701 (Connector 30P)	Not Used	9607S - 30F	
	Remote Sensor	SBX1785 - 51	Not Used	

SWITCH BOARD ASSY

PWZ2805 and PWZ2804 have the same construction except for the following :

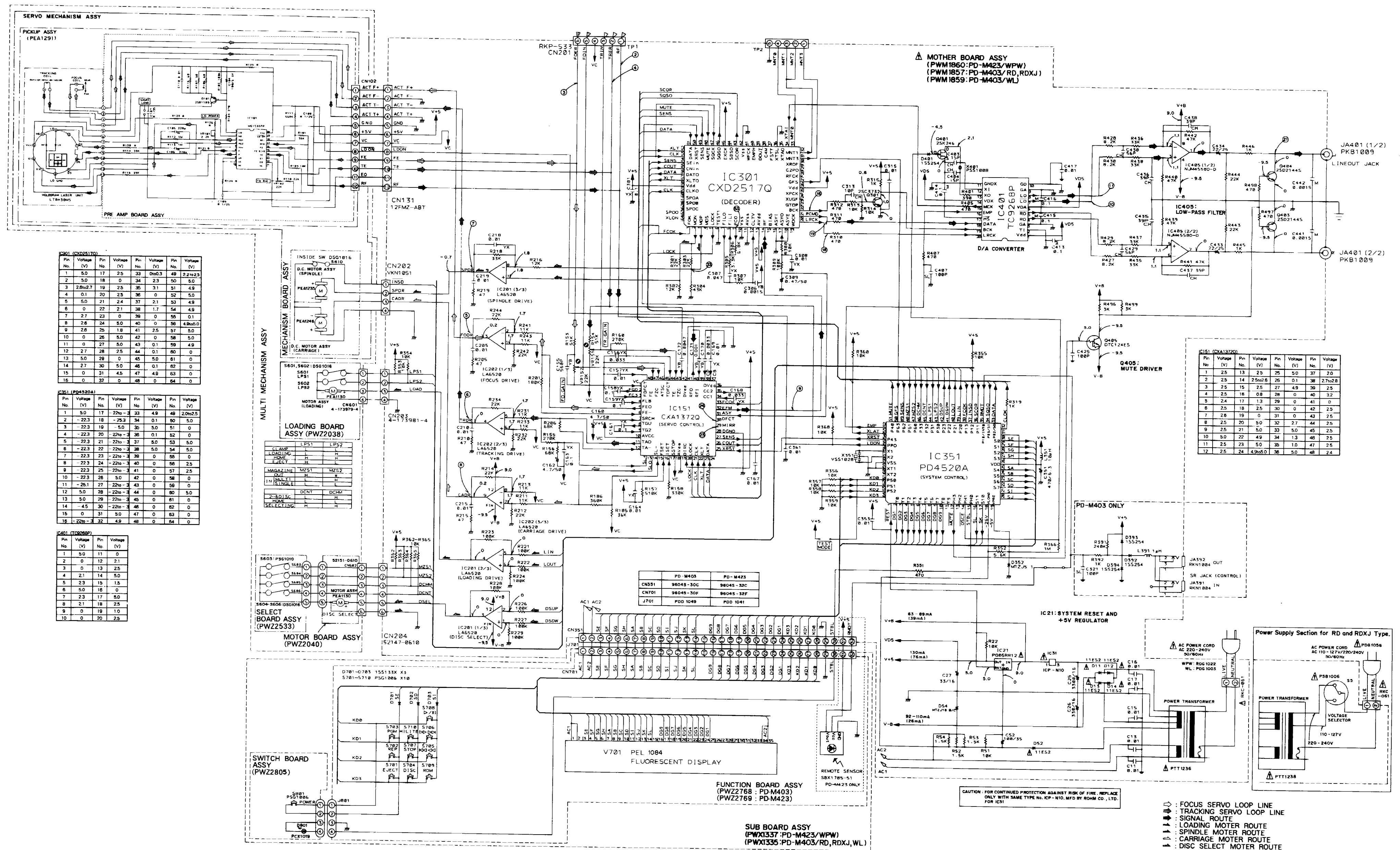
Mark	Symbol & Description	Part No.		Remarks
		PWZ2804	PWZ2805	
	D801	Not Used	PCX1019	* 2

Note : \* 2 : Refer to “ 3. SCHEMATIC DIAGRAM ” and “ 4. PCB DIAGRAM ”.

NOTE FOR SCHEMATIC DIAGRAMS  
(Type 4A)  
1. When ordering service parts, be sure to refer to  
- PARTS LIST of EXPLODED VIEWS - or -PCB  
PARTS LIST.  
2. Since these are basic circuits, some parts of them or the  
values of some components may be changed for improv-  
ement.  
3. RESISTORS:  
Unit: k (K), M (M), or Ω unless otherwise noted  
Tolerance: (F) ±1%, (C) ±2%, (K) ±10%, (M) ±20% or ±5% un-  
less otherwise noted  
4. CAPACITORS:  
Unit: p (pF) or μF unless otherwise noted  
Ratings: capacitor (μF) / voltage (V) unless otherwise noted  
5. COILS:  
Unit: mH or μH unless otherwise noted  
6. VOLTAGE AND CURRENT:  
DC voltage (V) in PLAY mode unless otherwise noted  
or V  
DC current in PLAY mode unless otherwise noted  
or mA  
Value in ( ) is DC current in STOP mode  
7. OTHERS:  
• ⊘ or ∅ Adjusting point  
• The Δ mark found on some component parts indicates the im-  
portance of the safety factor of the parts. Therefore, when re-  
placing, be sure to use parts of identical designation  
• SCH-□ indicates the drawing number of the schematic dia-  
gram (SCH stands for schematic diagram)  
8. SWITCHES (Underline indicates switch position):  
FUNCTION BOARD ASSY SWITCH BOARD ASSY  
S701 - EJECT S801 - POWER  
S702 - REPEAT  
S703 - PROGRAM  
S704 - DISC  
S705 - EJECT  
S706 - EJECT  
S707 - STOP  
S708 - EJECT  
S709 - EJECT  
S710 - HI - LIFE SCAN

PD-M423, M403

### 3. SCHEMATIC DIAGRAM



- ⇨ : FOCUS SERVO LOOP LINE
- ⇨ : TRACKING SERVO LOOP LINE
- ⇨ : SIGNAL ROUTE
- ⇨ : LOADING MOTER ROUTE
- ⇨ : SPINDLE MOTER ROUTE
- ⇨ : CARRIAGE MOTER ROUTE
- ⇨ : DISC SELECT MOTER ROUTE



4. PCB DIAGRAM

\*3

	PD-M403/RD RDXJ	OTHERS
W114	Not Used	Used
W115	Used	Not Used
W109	Not Used	Used

\*4

	PD-M423/WPW	OTHERS
W182	Used	Not Used
W183	Not Used	Used
W203	Not Used	Used
W309	Not Used	Used

• This diagram is viewed from the mounted parts side.

\*1

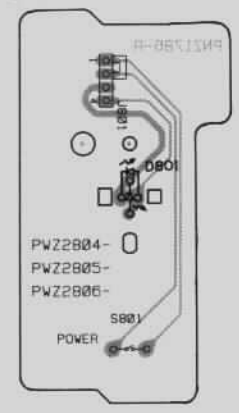
	PD-M423	PD-M403
CN351	9604S-32C	9604S-30C
CN701	9604S-32F	9604S-30F

\*2 : PD-M403/RD, RDXJ ONLY

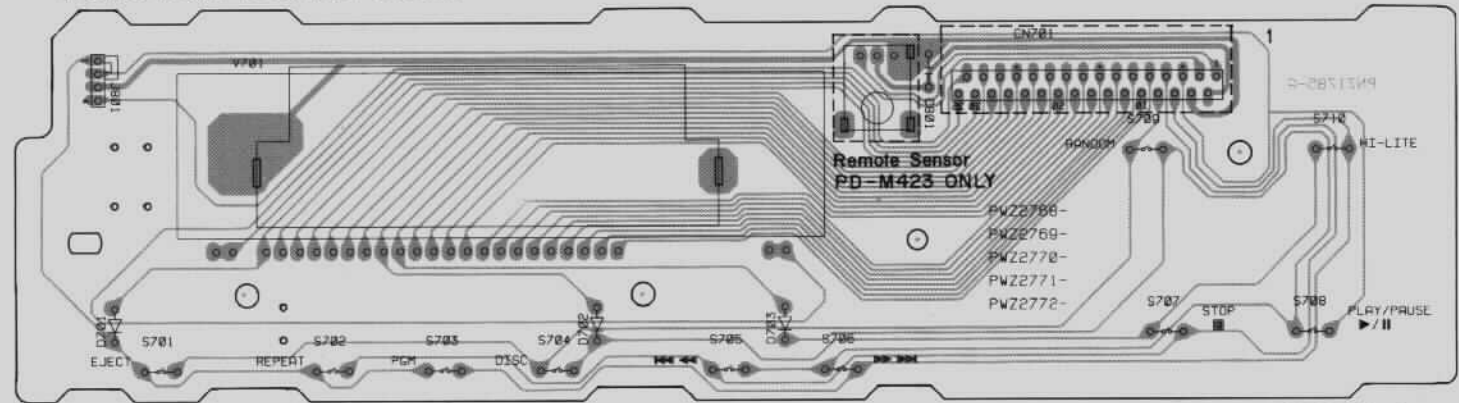
NOTE FOR PCB DIAGRAMS:  
1. Part numbers in PCB diagrams match those in the schematic diagrams.  
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

SWITCH BOARD ASSY

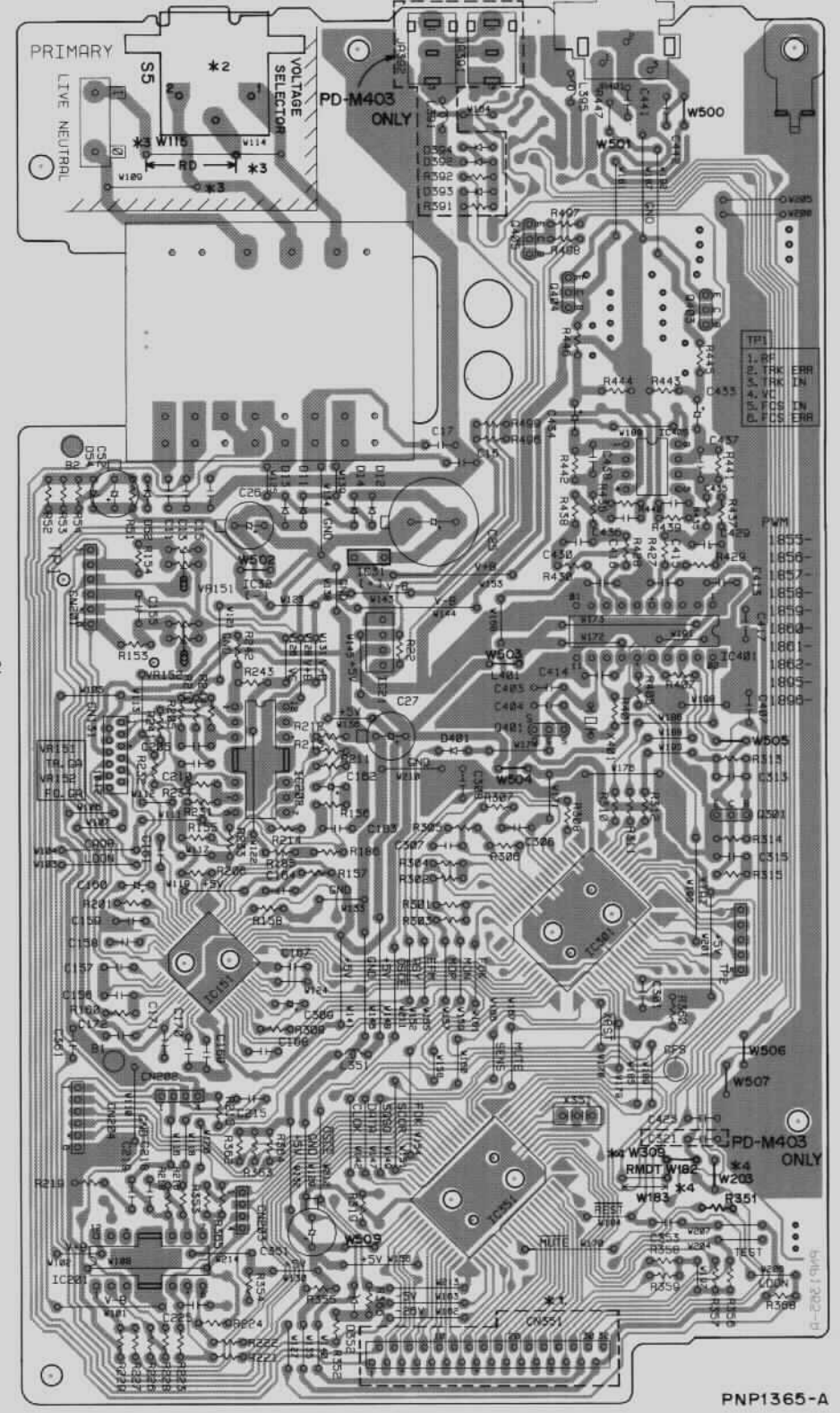


FUNCTION BOARD ASSY



PNP1366 - A

MOTHER BOARD ASSY



PNP1365 - A

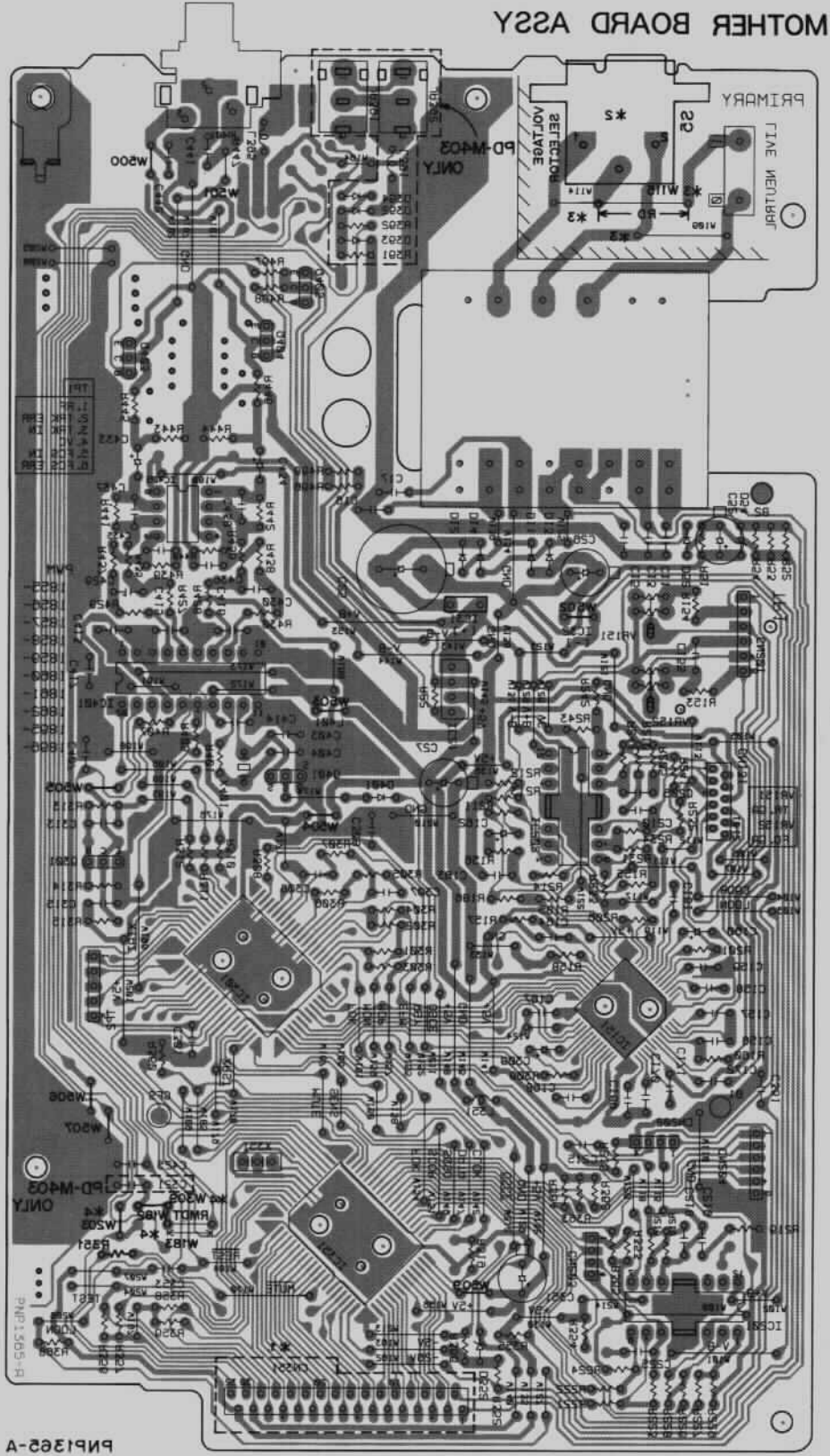
- This diagram is viewed from the foil side.

W109	Not Used	Used
W112	Used	Not Used
W114	Not Used	Used
	PD-M403\RD RDJ1	OTHERS

W3E9	Not Used	Used
W5E9	Not Used	Used
W8E9	Not Used	Used
W1E9	Not Used	Used
W2E9	Not Used	Used
W4E9	Not Used	Used
W6E9	Not Used	Used
W7E9	Not Used	Used
W9E9	Not Used	Used

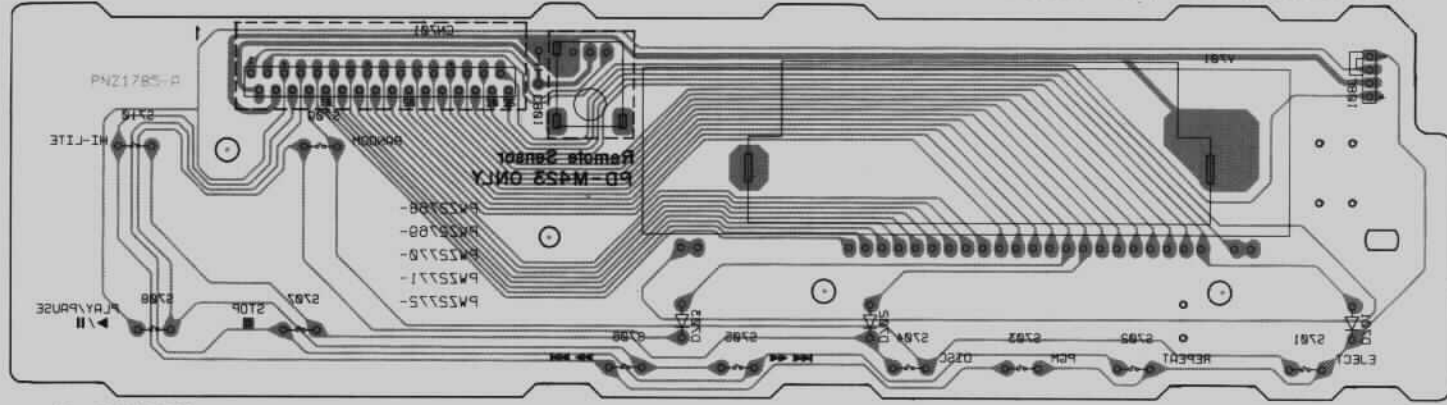
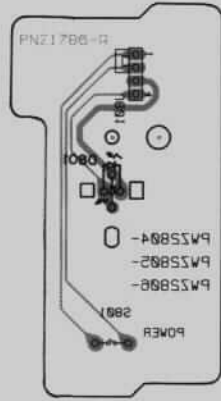
CN351	ae042-35C	PD-M453	LD-M403
CN701	ae042-35F	ae042-30F	

\* S : PD-M403\RD, RD\J ONLY



A-5851919

SWITCH BOARD ASSY



A - 8851919

2040  
4040  
E040

20431

1531

1531

1040  
SOSCI

1030

10301 10301

15331

10501

VR151  
VR152

4

# Service Manual

ORDER NO.  
RRV1236

**MULTI COMPACT DISC PLAYER**

# PD-M423

## PD-M403

- Refer to the service manual RRV1062 for PD-M423/KUXJ.

**THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).**

Type	Model		Power Requirement	Remarks
	PD-M423	PD-M403		
WEMXJ	○	○	AC220V - 240V	
WPWXJ	○	—	AC220V - 240V	
WLXJ	—	○	AC220V - 240V	

# 1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!

AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VARNING!

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRakta EJ STRÅLEN.



LASER  
Kuva 1  
Lasersäteilyn  
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.



LASER  
Picture 1  
Warning sign for  
laser radiation

IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER: 5 mw  
WAVELENGTH: 780-785 nm

## LABEL CHECK (MULTI MAGAZINE type)

### WEMXJ type

VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

VARNING!

Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

PRW1233

### WEMXJ type

ADVARSEL

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT!

UNGSICHTBARE LASERSTRÅLUNG TRITZ AUF, WENN DECKEL (ODER KLASSE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!  
VWV1004

### WLXJ type

**CAUTION**  
INVISIBLE LASER  
RADIATION WHEN OPEN,  
AVOID EXPOSURE  
TO BEAM

PRW1018

### Additional Laser Caution

#### 1. Laser Interlock Mechanism

The ON/OFF (ON : low level, OFF : high level) status of S601 (LPS1) and S602 (LPS2) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation except when both switches S601 and S602 are ON (low level or clamped state).

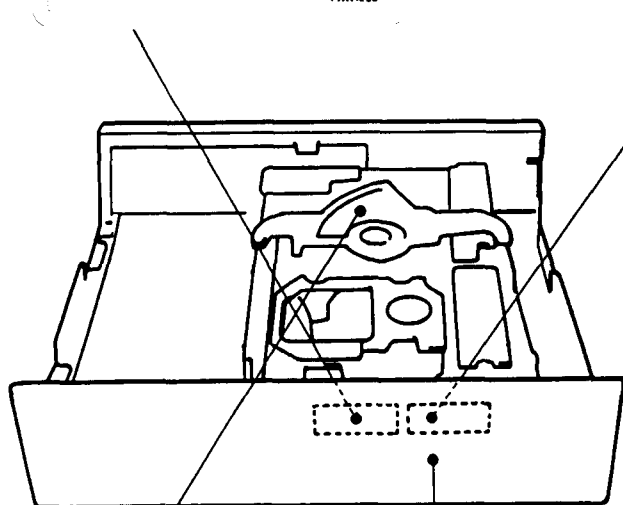
Thus, interlock will no longer function if switches S601 (LPS1) and S602 (LPS2) are deliberately shorted (low level). The interlock also does not function in the test mode \*.

Laser diode oscillation will continue, if pin 1 of M51593FP (IC101) on the PRE AMP BOARD ASSY mounted on the pickup assembly is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed and turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

'92M1B

\* Refer to page 26 on the service manual RRV1062.



WEMXJ and  
WLXJ types

**CLASS 1  
LASER PRODUCT**

VWV-328

WEMXJ and WLXJ types

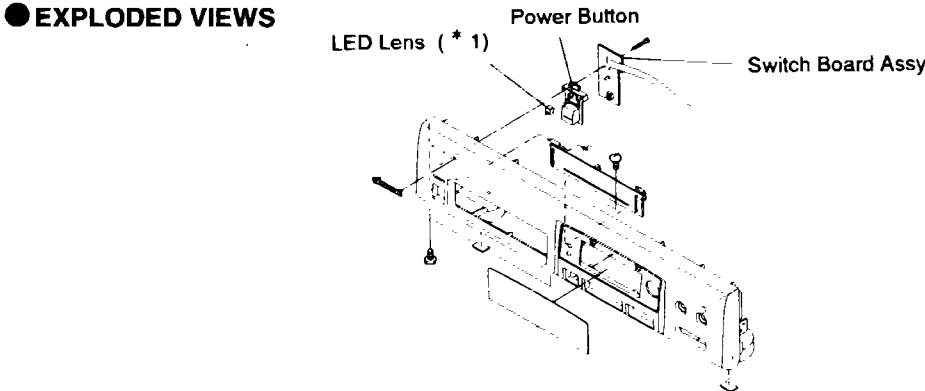
2. CONTRAST OF MISCELLANEOUS PARTS

- NOTES:
- Parts marked by “NSP” are generally unavailable because they are not in our Master Spare Parts List.
  - The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
  - Parts marked by “⊙” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

■ CONTRAST OF PD-M423/WEMXJ, WPWXJ, PD-M403/WEMXJ, WLXJ and PD-M423/KUXJ

PD-M423/WEMXJ, WPWXJ, PD-M403/WEMXJ, WLXJ and PD-M423/KUXJ have the same construction except for the following.

Mark	Symbol & Description	Part No.					Remarks
		PD-M423/ KUXJ	PD-M423/ WEMXJ	PD-M423/ WPWXJ	PD-M403/ WEMXJ	PD-M403/ WLXJ	
Δ	Mother Board Assy	PWM1858	PWM1896	PWM1896	PWM1895	PWM1895	
NSP	Sub Board Assy	PWX1336	PWX1337	PWX1337	PWX1335	PWX1335	
	Function Board Assy	PWZ2769	PWZ2769	PWZ2769	PWZ2768	PWZ2768	
NSP	Switch Board Assy	PWZ2804	PWZ2805	PWZ2805	PWZ2805	PWZ2805	
Δ	Power Cord with Plug	PDG1015	PDG1003	RDG1022	PDG1003	PDG1003	
Δ	Strain Relief	CM-22C	CM-22B	CM-22B	CM-22B	CM-22B	
Δ	Power Transformer (AC120V)	PTT1237	Not Used	Not Used	Not Used	Not Used	
Δ	Power Transformer (AC220 – 240V)	Not Used	PTT1236	PTT1236	PTT1236	PTT1236	
	32P F.F.C/30V (J701)	PDD1041	PDD1041	PDD1041	Not Used	Not Used	
	30P F.F.C/30V (J701)	Not Used	Not Used	Not Used	PDD1049	PDD1049	* 1
	Display Window	PAM1635	PAM1671	PAM1635	PAM1670	PAM1634	
	Function Panel	PNW2387	PNW2567	PNW2388	PNW2566	PNW2390	
	LED Lens	Not Used	PNW2019	PNW2019	PNW2019	PNW2019	
NSP	Rear Base	PNA2068	PNA2199	PNA2202	PNA2198	PNA2203	
	Foot Assy	AEC1531	Not Used	AEC1531	Not Used	AEC1531	Front and Rear Leg
	Rubber Sheet	AEB1111	Not Used	AEB1111	Not Used	AEB1111	
	Insulator	Not Used	PNW1912	Not Used	PNW1912	Not Used	
	65 Label	ORW1069	Not Used	Not Used	Not Used	Not Used	
NSP	Caution Label	Not Used	VRW1094	Not Used	VRW1094	PRW1018	
	Caution Label (F)	Not Used	VRW-328	Not Used	VRW-328	VRW-328	Refer to page 2
	Caution Label (G)	Not Used	VRW-329	Not Used	VRW-329	VRW-329	Refer to page 2
	Caution Label HE	Not Used	PRW1233	Not Used	PRW1233	Not Used	Refer to page 2
	Connection Cord with Mini Plug (for SR cord)	PDE-319	Not Used	Not Used	PDE1247	PDE1247	
	Connection Cord with Pin Plug (for AUDIO)	PDE1109	PDE1248	PDE1248	PDE1248	PDE1248	
	Remote Control Unit	PWW1107	PWW1107	PWW1107	Not Used	Not Used	
	Battery Cover	PZN1010	PZN1010	Not Used	Not Used	Not Used	
	Battery (R03, AAA)	VEM-022	VEM-022	VEM-022	Not Used	Not Used	
	Operating Instructions (English)	PRB1231	PRB1231	Not Used	Not Used	Not Used	
	Operating Instructions (French/German/Italian/Dutch/Swedish/Spanish/Portuguese)	Not Used	PRD1004	Not Used	PRD1004	Not Used	
	Operating Instructions (English/Spanish/Chinese)	Not Used	Not Used	Not Used	Not Used	PRE1214	
	Packing Case	PHG1999	PHG2108	PHG2120	PHG2107	PHG2121	



MOTHER BOARD ASSY

PWM1896, PWM1895 and PWM1858 have the same construction except for the following :

Mark	Symbol & Description	Part No.			Remarks
		PWM1858	PWM1896	PWM1895	
	IC31	Jumper	ICP-N10	ICP-N10	* 2
	D391	1SS254	Not Used	Nto Used	
	D392 - D394	1SS254	Not Used	1SS254	
	L351	LAU100K	LAU100J	LAU100J	
	L391	LAU010K	Not Used	LAU010J	
	C29, C302	Not Used	CFTYA104J50	CFTYA104J50	* 2
	C321	CCCSL101J50	Not Used	CCCSL101J50	
	C410	Not Used	CCCSL101J50	CCCSL101J50	
	R316	Not Used	RD1/6PM471J	RD1/6PM471J	
	R351	Not Used	RD1/6PM471J	RD1/6PM471J	
	R391	RD1/6PM244J	Not Used	RD1/6PM244J	* 2
	R392	RD1/6PM102J	Not Used	RD1/6PM102J	
	CN351 (Connector 32P)	9604S - 32C	Not Used	Not Used	
	CN351 (Connector 30P)	Not Used	Not Used	9604S - 30C	
	JA391, JA392	RKN1004	Not Used	RKN1004	

Note : \* 2 : Refer to “ 3. SCHEMATIC DIAGRAM ” and “ 4. PCB DIAGRAM ”.

FUNCTION BOARD ASSY

PWZ2768 and PWZ2769 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		PWZ2769	PWZ2768	
	CN701 (Connector 32P)	9607 - 32F	Not Used	
	CN701 (Connector 30P)	Not Used	9607S - 30F	
	Remote Sensor	SBX1785 - 51	Not Used	

SWITCH BOARD ASSY

PWZ2805 and PWZ2804 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		PWZ2804	PWZ2805	
	D801	Not Used	PCX1019	* 2

Note : \* 2 : Refer to “ 3. SCHEMATIC DIAGRAM ” and “ 4. PCB DIAGRAM ”.

NOTE FOR SCHEMATIC DIAGRAMS  
(Type 4A)  
1. When ordering service parts, be sure to refer to  
- PARTS LIST of EXPLODED VIEWS - or -PCB  
PARTS LIST.  
2. Since these are basic circuits, some parts of them or the  
values of some components may be changed for improv-  
ement.  
3. RESISTORS:  
Unit: k (K), M (M), or Ω unless otherwise noted  
Tolerance: (F) ±1%, (G) ±2%, (K) ±10%, (M) ±20% or ±5% un-  
less otherwise noted  
4. CAPACITORS:  
Unit: p (pF) or μF unless otherwise noted  
Ratings: capacitor (μF) / voltage (V) unless otherwise noted  
5. COILS:  
Unit: mH or μH unless otherwise noted  
6. VOLTAGE AND CURRENT:  
DC voltage (V) in PLAY mode unless otherwise noted  
or V  
DC current in PLAY mode unless otherwise noted  
or mA  
Value in ( ) is DC current in STOP mode  
7. OTHERS:  
• ⊘ or ∅ Adjusting point  
• The Δ mark found on some component parts indicates the im-  
portance of the safety factor of the parts. Therefore, when re-  
placing, be sure to use parts of identical designation  
• SCH-□ indicates the drawing number of the schematic dia-  
gram (SCH stands for schematic diagram)  
8. SWITCHES (Underline indicates switch position):  
FUNCTION BOARD ASSY SWITCH BOARD ASSY  
S701 - EJECT S801 - POWER  
S702 - REPEAT  
S703 - PROGRAM  
S704 - DISC  
S705 - EJECT  
S706 - EJECT  
S707 - STOP  
S708 - EJECT  
S709 - EJECT  
S710 - HI - LIFE SCAN

PD-M423, M403



3. SCHEMATIC DIAGRAM

A

B

C

D

E

F

A

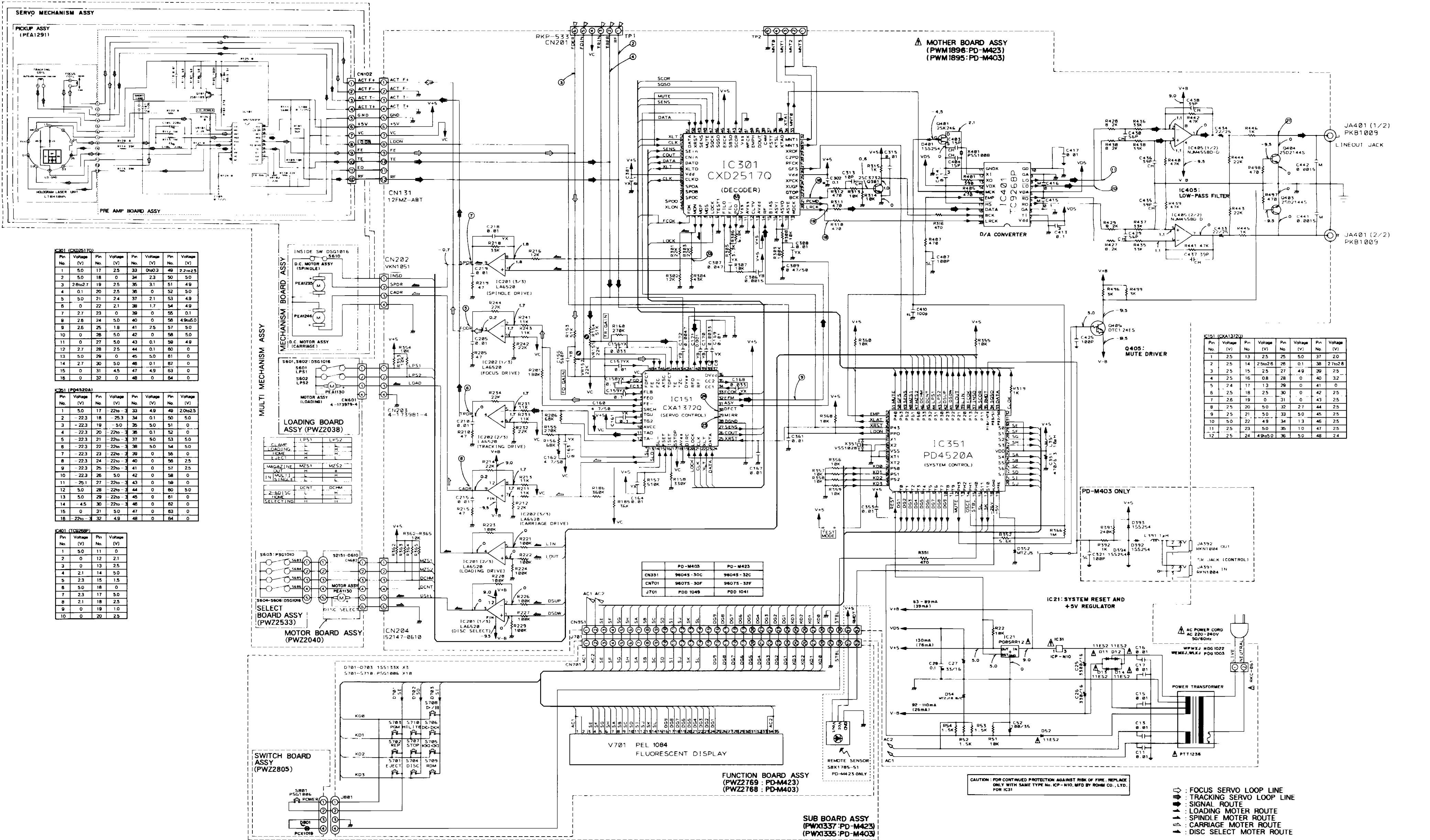
B

C

D

E

F



4. PCB DIAGRAM

• This diagram is viewed from the mounted parts side.

\* 1

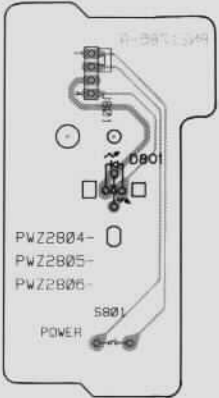
	PD-M423	PD-M403
CN351	9604S - 32C	9604S - 30C
CN701	9607S - 32F	9607S - 30F

\* 2 : PD-M423 ONLY  
\* 3 : PD-M403 ONLY

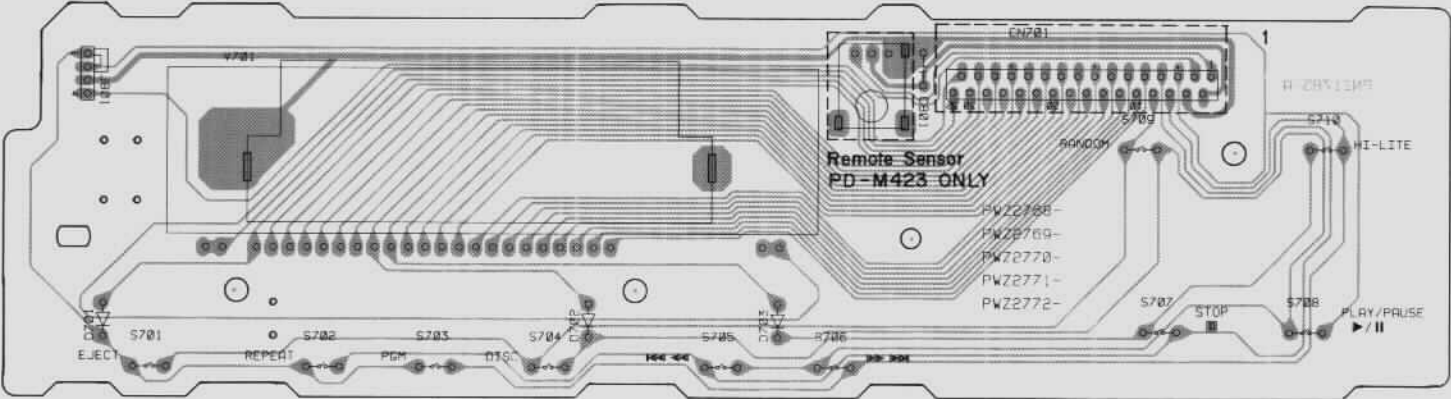
NOTE FOR PCB DIAGRAMS:  
1. Part numbers in PCB diagrams match those in the schematic diagrams.  
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

SWITCH BOARD ASSY

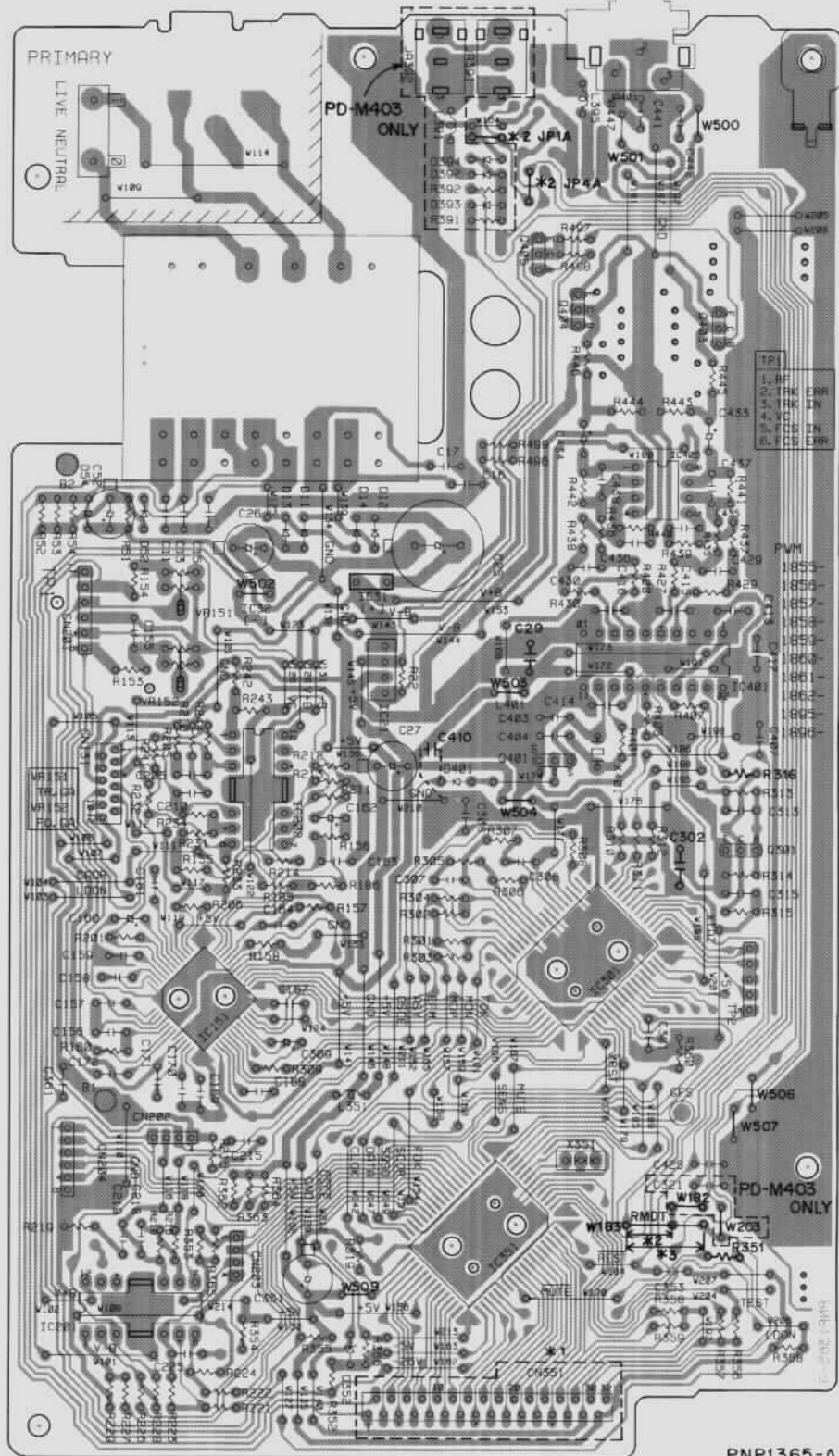


FUNCTION BOARD ASSY



PNP1365 - A

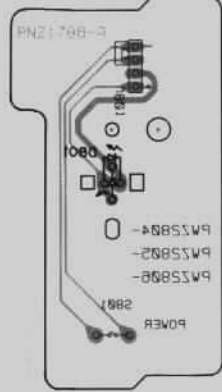
MOTHER BOARD ASSY



PNP1365 - A

\* 3 : PD-M403 ONLY  
\* 2 : PD-M453 ONLY

CN501	9807S - 35F	PD-M453
CN351	9804S - 35C	PD-M403
	9807S - 30F	



	IC401	CS1	VR15V	VR15I	IC402
--	-------	-----	-------	-------	-------

1040  
SOSOI  
0301  
21 10301 12

FUNCTION BOARD ASSY